**Disclosure of the Invention**

The invention encompasses the combination of two printing technologies into a single web fed printing press 10, particularly the combination of flexographic 14 and intaglio 17 printing. Other features may be present in the combination web printing press 10 as well, such as die cutting, offset printing, gravure printing, hologram application, and the like. The aforementioned combining process is accomplished through the use of precision servo motors 35 coupled with motion control hardware 40 and software (Appendix). The computer programs (Appendix) incorporated into this application were written by the inventor to accomplish the complex process of marrying two dissimilar printing processes in a single press.

The combination of two dissimilar printing processes is a complex problem of motion control. Web tension and position must be maintained throughout the printing process in order to achieve accurate print registration. The inventor has implemented precision control of the web using high accuracy servo motors 35 combined with low inertia drive rollers 25, 39, 42. A multi-processor motion control system 40 commands the activity of the servo motors 35 and monitors the resultant movement with digital position feedback. All solenoids, lights, and switches are interfaced to the press computer 40 using an integrated programmable logic controller.

The press controller 40 is comprised of a PC based computer using RISC based motion control boards. Each RISC based motion control board has its own processor, and supports up to eight channels of motion control. A single servo motor 35 defines a channel. Each point of web control uses a unique servo motor 35. Each motion control board runs a unique software program created by the inventor. The operator interface is driven by the host PC running Microsoft Windows and an application program (Appendix). This application program obtains information from the operator, converts it to machine commands, and passes it to the motion control boards via the PC back plane. It is the host PC application that coordinates the entire operation of the press 10, including programmable logic controller functions.

**Brief Description of the Drawing**

FIG. 1A is a diagrammatic side elevational view of flexographic and intaglio print units according to the present invention; and

FIG. 2A is a diagrammatic side elevational view of optional finishing or processing units disposed downstream of the components shown in FIG. 1A.

**Best Mode For Carrying Out The Invention**

As illustrated in FIGS. 1A and 1B, the present combination flexographic and intaglio printing press, generally designated 10, can be looked at as a multi-axis robot. Robots are thought to handle materials in an orderly way, moving them from one place to another, and performing operations along the way to alter the effect of the material. The press handles substrate or web material 11 wound in a roll 12, typically on a three inch cardboard core with an outside diameter of forty inches. The number of feet of material 11 on the roll depends on the type and thickness of the material being printed. The press is not limited to printing on paper; films, polymers, and the like are also suitable as a printing substrate 11. The width of the substrate or web 11 is a function of the design width of the combination press. An unwinder 13 acts as a delivery device for the substrate 11. The substrate 11 is pulled from the unwinder 13 by a first flexographic print unit 14 in the press line. The unwinder 13 includes a conventional tensioning mechanism 16 to provide resistance. The degree of resistance applied to the web by the unwinder 13 is adjustable, and regulated by a stand-alone tension controller.

All of the printers in the press line are flexographic print units 14. Preferably, the flexographic press units 14 precede the intaglio print units 17. One or more flexographic print units 14 apply ink to the substrate 11. The units' motion can be effected as a group with a single servo 35, or independently with a servo 35 for each print unit 14. The servo(s) 35 are controlled by a motion controller board 45 in the press computer 40. Since axis or unit numbers are generally assigned chronologically from the first unit in the line up, the first flexo 14, or group of flexo units 14 are assigned unit 1. This or these servos receive speed and position information from the motion controller 45. A reference signal to the motion controller(s) is derived from one of two sources: 1) in Flexo only mode, where the press is printing with the Intaglio unit disabled, the reference signal is synthesized from internal reference generator software, and 2) in combination mode, the reference signal is generated by an optical encoder 21 mounted on the intaglio unit drive 22. The motion controller 45 generates a command to the servo based on the reference signal generated and other parametric data such as operator data, print repeat length, and so on. Print registration (the alignment of one printed feature to another) can be adjusted by actions of the operator making entries to the host computer, which is translated to

machine commands, and ultimately affects the command to the servo(s). The printed ink is dried at each flexographic print unit 14, typically with hot air or ultraviolet light. Operator pushbuttons at the unit(s) 14 connect to the integrated PLC. Each action at one or more of the pushbuttons is evaluated by the integrated PLC in the host computer 40 which gets translated to machine commands, resulting in appropriate action by the motion controller(s) 44, 45.

The intaglio unit 17 generally follows the flexographic print unit(s) 14. The press will include one or more intaglio print units 17 and contain one or more inking units 23 each. Intaglio units 17 also include some form of wiping system 24 to remove excess ink applied to the plate. The intaglio unit(s) may also contain a prewipe system that removes excess ink from the plate. Each of the subsystems within the Intaglio unit(s) is controlled by the integrated PLC. Multiple servos coordinate the movement of paper through each intaglio unit.

When the press operator selects the operating mode of flexographic only, which may include other units on the press such as the aforementioned ones, the intaglio unit(s) 17 is inactive. The operator bypasses the intaglio unit(s) 17 by creating a web path around the unit(s). This is accomplished by passing the web 11 over rollers that route the web over or under said unit(s). Press motion commands from pushbuttons such as Jog and Run cause no movement within the Intaglio unit(s). Servo motor speed and position information is created using an internal synthesized method.

When combination print mode is selected, the first intaglio unit 17 in the press line generates the motion reference signal. All servo movement is coordinated by this signal. Flexographic unit(s)' servo(s) move in conjunction to the reference signal. The signal is conditioned by parametric data such as print repeat length, web tension set point, and the likes. Software algorithms continuously compute the associated servo commands which, when combined with servo motor digital position feedback, provide precise movement of the servo. It is said that this activity is referred to as an electronic gearbox. The software controls which signals and parameters are needed to effectively maintain registration between each dissimilar unit(s) in the press line. Complex algorithms message the reference signal before passing it on to the specific servo motors. The intaglio unit(s) utilize a "stop-n-go" substrate transport. This mechanism creates an

intermittent movement of the web similar to a movie projector. A series of four servos establish the intermittent motion. Since the Flexographic and other units in the press line require continuous and stable web movement, it is necessary for the "stop-n-go" transport to accept web as continuous flow and deliver web in a continuous flow to the next unit in the line. Each servo drives a pull roller 25 that the web contacts, thus allowing the servo to affect the position of the web. The implementation of the servos is as follows: 1) the first servo pulls web in a continuous manner from the previous unit. Its motion command from the motion controller is based on the reference signal and the parameters associated with web tension settings. It pushes the web into a vacuum box 26, which is used as an accumulator. A vacuum pump insures that adequate vacuum is present to receive web at the speed necessary. 2) The second servo, referred to as shuttle drive #1, pulls web from vacuum box #1 and passes it to the intaglio plate cylinder 27. The command for this servo is based on the reference signal and several other key elements. It is the responsibility of this servo to position the web in register with the image on the intaglio plate. The intaglio plate is mounted to a cylinder that has a circumference of double the largest Flexo plate cylinder. The intaglio plate cylinder is moving at twice the surface speed as the Flexo plate cylinder(s) so that both make a revolution in the same period of time. The shuttle #1 servo creates an intermittent motion pattern of web so that part of the time the web is stopped while part of the time the web is moving twice the speed as is the other units in the press line. The algorithm that generates the command to the servo uses the reference position to calculate the position of the shuttle 500 times per second. A mark sensor reads registration marks printed by the first unit in the press line to adjust the motion commands to permit perfect registration. It is the register mark that allows the motion controller to compensate for slippages in the web across rollers, slight elongations in the web, and other artifacts of the printing process. The motion algorithm uses a sine type pattern generator thereby creating a smooth transition from the "web stopped" portion of the cycle to "web moving" portion of the cycle. This sinusoidal pattern of motion is synchronized to the leading edge of the intaglio printing plate by the reference, and its relationship to the registration marks read on the web. Mark register data is collected through direct connection of the mark sensor to the motion controller board(s). 3) The third servo is referred to as shuttle servo #2. This servo accepts web from shuttle servo #1

after printed by the intaglio plate cylinder. The servo's command is identical to that of shuttle servo #1 with one exception: this servo command includes additional parametric data to create a slight difference in position relative to shuttle servo #1. In numerical terms, when shuttle servo #1 moves 1" forward, shuttle servo #2 may move 1.001" forward. This creates a slightly higher web tension while the web undergoes intaglio printing. Parametric data affects the amount of gain in shuttle servo #2. Shuttle servo #2 passes the web to vacuum box #2 (28), which serves as an accumulator as does vacuum box #1. 4) The fourth servo in the transport pulls web from vacuum box #2 and passes it to the next unit in the press line. This servo is running in a continuous motion mode, based on the reference signal. Parametric data establishes the electronic gear ratio so that the web is being delivered to the next unit at the same position and speed as the first servo accepted web from the previous unit on the press line.

Once the web 11 is printed with the intaglio ink, it passes through a forced air dryer 18. A chill unit 19 follows next in the press line, cooling the back to ambient temperature from a highly elevated temperature in the intaglio dryer 38. The web is passed across several chilled rollers 30 in a zigzag pattern. Circulating refrigerated water through the cores chills the rollers. The chilled rollers 30 are driven by a servo motor 35 that receives its command based on the reference and parametric data such as web tension settings. Additional intaglio unit(s) 17 would follow the first intaglio unit, if included. Their operation is identical to that of the first intaglio unit, described above.

As illustrated in FIG.1B, finishing or processing units follow in the press line. These units may consist of one or more of the following: die cutting unit 33, registered holographic application unit, RFID applicator, numbering, or other. Each respective unit would be driven by a separate servo motor 35, which receives its command from the motion controller board(s). These units and their respective servo move the web in a continuous motion, using parametric data to affect registration and tension. Each unit may include a mark sensor to further affect the motion command. Precise registration is obtained when mark sensor data is part of the motion command, as web distortion, elongation, and the likes, become known in the calculations for the command. Likewise, conventional rewinding 37, folding, and/or sheeting apparatus may be included in the press line. Once the web is printed, and other features are added as necessary, the web

gets delivered as follows depending on customer requirements: A rewinder 37 accepts web from the previous unit in the press line and winds it onto paper cores. The size of the core and the overall dimension of the finished roll are dependent on the type of rewinder used and customer requirements. Typically, a roll would be wound on a 3 inch core and a 40 inch finish diameter. Rewinders are generally stand-alone units that receive basic run / stop information from the integrated PLC. Folders are driven by a servo motor that receives commands based on the reference and parametric data. A folder delivers the web in a fan folded format, and subsequently gets boxed in 2500 folded documents to a box. A sheeter is driven by a servo motor that receives commands from the motion controller(s) based on the reference signal and parametric data. A mark sensor normally accompanies the controls for a sheeter, as the cut position is a close registration feature. A sheeter accepts web from the previous unit in the press line and cuts the web into a equal length documents that are subsequently boxed by the 500 to 2500 unit count. The cut registration is accurately maintained when a mark sensor is incorporated to read the registration mark printed by the first active unit in the press line.

Software algorithms utilize digital data from devices on each of the units on the press line, incorporate that information with parametric data from the operator, and configuration data that specifies the resolution of each position encoder, the circumference of cylinders and pull rolls, and other machine specific data. It is this data that results in precise commands to each servo in the press that in turn results in accurate movement of the web under all operating conditions. Preferably, each servo has a separate algorithm evaluating the data and issuing commands. Electronic gearing can be thought of as the general activity of each algorithm. Additional computations take dynamics into account that include web stretch, web elongation, and other web distortions. In the case of the intaglio unit(s) 17, the shuttle roller 39 movement is based on a profile, or cam pattern. It's commanded position is continuously modified by position mark sensor data. The press operator adjusts parameters on the graphics display that results in web tension changes, as required by various substrate types. Algorithms adjust the servos commands so that the respective servo runs slightly slower or faster than the previous unit.

Glossary:

Prewipe unit: Used in conjunction with intaglio printing. An inking unit applies ink to the intaglio printing plate. The prewipe unit contacts the plate next for the purpose of removing excess ink from the printing plate. A typical configuration of a prewipe unit would include the prewipe roller, a doctor roller, and a doctor blade. The doctor roller removes the ink from the prewipe roller, and the doctor blade removes ink from the doctor roller. The removed ink is collected in a recovery system for either disposal or recycling.

Reference: This is the signal that orchestrates the movement of servos in the press line. It can be thought of in the same way as a conductor in an orchestra.

Registration: The alignment of multiple features to a substrate. An example is the alignment of two separate colors on a web. Another would be the alignment of printing on the web to that of a die cutting unit.

Servo motor: Refers to a high precision variable speed motor. Servos possess the ability to maintain precise speeds, accelerate or decelerate loads in a fraction of a second. Web: The stream of paper or other substrate that spans the length of the press is the web. It starts at the unwinder, pulled from a roll, and extends to the delivery end of the press where it is either rewound into a roll, cut into sheets, or folded.

Wiping System: Part of an Intaglio print unit, the unit removes excess ink from the engraved printing plate. An intaglio inker applies ink to areas of a printing plate. The wiping system removes all ink from the surface of the plate thus leaving in only the engravings on a plate. When a prewipe system is included, it tends to reduce the load on the wiping system by taking a preliminary wipe on the plate. Wiping systems come in two forms, and are vastly different from each other. They are: 1) Water wipe system. A water wipe system utilizes a rubber covered roller that contacts the printing plate, rotating so that its surface is moving in the opposite direction as the plate cylinder. This effectively rubs the ink off the surface of the printing plate. Once the ink is collected on the wiping cylinder, it later comes in contact with cleaning solution, brushes, and a doctor blade. The process of wiping and cleaning is ongoing. The cleaning solution carries the excess ink away which is disposed in a separate process. 2) A paper wipe system removes ink similarly to the extent that the wiping roller is used to press paper against the plate, using

the same opposite direction movement. In this system, the ink is carried away on the paper, which starts at an unwinder, runs across the wiping roller, then rewound onto a paper core.

The press 10 utilizes three separate software programs (Appendix), each running on it's-own processor 40, 44, 45. An industrial PC 40 runs the host software with two RISC processor based motion control boards 44, 45 plugged into the industrial PC back plane. The industrial PC 40 acts as the host to coordinate the activities of itself and the motion control processors 44, 45. Operator interaction takes place through the host processor through the use of color graphic screen information and input through a keyboard/mouse combination or a touch screen. The motion control processors 44, 45 interpret commands from the host 40 via the PC back plane and carry out the activity of managing the machine motion throughout the press 10.

The first motion control processor 44 manages the activities of the intaglio unit 17 including the stop and go web transport. It also generates timing signals that one or more other motion control processors 45 utilize to synchronize web motion so as to maintain web tension and registration.

When the press 10 is operated in the combination mode where the intaglio printing is taking place in conjunction with the flexo printing and possibly other features on the press, the following process is utilized to manage motion: 1) The operator initiates a command to run the press via a run pushbutton; 2) the run command is interpreted by the host 40, and subsequently passes the command on to the first motion processor 44; 3) the first motion processor 44 enables the main drive 22 on the intaglio unit 17 and sends it a speed command ; 4) the intaglio gear train, coupled with the main printing cylinder 27, rotates at the preset speed, which in turn causes the mechanically coupled reference encoder 21 to rotate; 5) the signal from the reference encoder is fed to the first motion processor 44; 6) the value of the reference encoder provides a binary number that points to a lookup table in the processor 44 signifying the position of each of the servo motors used to position of the web 11; 7) the values in the lookup table are adjusted both statically when the press is calibrated and dynamically as a result of reading information about the web 11 on an ongoing basis via registration mark sensors and web tension sensors (the location of each of the sensors is dependant on the press configuration and

may or may not exist depending on the press configuration); 8) the first motion processor 44 also distributes the value of the reference encoder in real time across the PC back plane to the other motion processor(s) 45; 9) the other motion processor(s) 45 adjust the position of their respective servo motors based on their respective lookup tables.

When the press is operated without the intaglio unit 17, the first motion processor 44 generates a synthesized reference encoder signal that it uses and distributes to the other motion control board 45. In this case, the sequence of activity matches that of the combination mode with the following exceptions: 1) the host run and speed command is converted to the synthesized signal rather than generating the enable and speed commands to the intaglio main drive.

# Appendix

```
FrmProduction - 1

Option Explicit

Private Sub Command10_Click()

    Call ExitProduction

End Sub

Private Sub Command11_Click()

    'Get a login ID code from operator

    Dim I%

    WhoseFocus% = 1 'Tell Apad to come back to us
    Productiontrace% = 2 'Return path

    frmApad!Text1.Text = ""
    frmApad.Visible = True


End Sub

Private Sub Command12_Click()

    'Handle the logout - simple at this point

    FrmProduction.Text1.Text = ""
    frmMain.Text2.Text = ""


End Sub

Private Sub Command13_Click()

    WhoseFocus% = 4 'This is the Production mode
    Productiontrace% = 1 'Set return address
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Start with null


End Sub

Private Sub ExitProduction()

    FrmProduction.Visible = False
    frmMain.Text1.Text = "Standby"
    frmMain.SetFocus

End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    If KeyCode = &H79 Then Call ExitProduction

End Sub

Private Sub Text1_Change()

    'Sync Operator ID on frmMain with this variable

    frmMain!Text2.Text = FrmProduction!Text1.Text

End Sub
```

```
frmPressrun - 1

Option Explicit

Private Sub Command10_Click()

    ExitPressrun

End Sub

Private Sub Command11_Click()

    Dim I!
    I! = frmPressrun.MhRealInput3.Text - 0.005
    frmPressrun.MhRealInput3.Text = I!

End Sub

Private Sub Command12_Click()

    Dim I!
    I! = frmPressrun.MhRealInput3.Text + 0.005
    frmPressrun.MhRealInput3.Text = I!

End Sub


Private Sub ExitPressrun()

    frmPressrun.Visible = False
    Pressruntrace% = 0 'Clear return flag
    frmMain.Text1.Text = "Standby"
    frmMain.SetFocus

End Sub

Private Sub Command13_Click()

    Dim I!
    I! = frmPressrun.MhRealInput5.Text + 0.005
    If I! > (System_circumference# - 0.001) Then I! = 0
    frmPressrun.MhRealInput5.Text = I!

End Sub

Private Sub Command14_Click()

    Dim I!
    I! = frmPressrun.MhRealInput5.Text - 0.005
    If I! < 0 Then I! = System_circumference# - 0.005
    frmPressrun.MhRealInput5.Text = I!

End Sub

Private Sub Command15_Click()

    Dim I!
    I! = frmPressrun.MhRealInput3.Text - 0.1
    frmPressrun.MhRealInput3.Text = I!

End Sub

Private Sub Command16_Click()

    Dim I!
    I! = frmPressrun.MhRealInput3.Text + 0.1
    If I! > (System_circumference# - 0.001) Then I! = 0
    frmPressrun.MhRealInput3.Text = I!
```

```
frmPressrun = 2

End Sub

Private Sub Command17_Click()

    Dim I!
    I! = frmPressrun.MhRealInput5.Text - 0.1
    If I! < 0 Then I! = System_circumference# - 0.1
    frmPressrun.MhRealInput5.Text = I!

End Sub

Private Sub Command18_Click()

    Dim I!
    I! = frmPressrun.MhRealInput5.Text + 0.1
    If I! > (System_circumference# - 0.001) Then I! = 0
    frmPressrun.MhRealInput5.Text = I!

End Sub

Private Sub Command19_Click()

    'Toggle Intaglio Auto/Manual
    If RegIntaglioAuto% = 0 Then
        RegIntaglioAuto% = 1
        frmPressrun!Label32.Visible = True
        Else
        RegIntaglioAuto% = 0
        frmPressrun!Label32.Visible = False
    End If
    VarChangeFlag%(5) = 1

End Sub

Private Sub Command20_Click()

    'Toggle Cutoff Auto/Manual
    If RegCutoffAuto% = 0 Then
        RegCutoffAuto% = 1
        frmPressrun!Label4.Visible = True
        Else
        RegCutoffAuto% = 0
        frmPressrun!Label4.Visible = False
    End If
    VarChangeFlag%(8) = 1

End Sub

Private Sub Command21_Click()

    Dim I!
    I! = frmPressrun.MhRealInput2.Text + 0.1
    If I! > (System_circumference# - 0.001) Then I! = 0
    frmPressrun.MhRealInput2.Text = I!

End Sub

Private Sub Command22_Click()

    Dim I!
    I! = frmPressrun.MhRealInput2.Text - 0.1
    If I! < 0 Then I! = System_circumference# - 0.1
    frmPressrun.MhRealInput2.Text = I!

End Sub

Private Sub Command23_Click()
```

```
frmPressrun - 3


    Dim I!
    I! = frmPressrun.MhRealInput2.Text + 0.005
    If I! > (System_circumference# - 0.001) Then I! = 0
    frmPressrun.MhRealInput2.Text = I!

End Sub

Private Sub Command24_Click()

    Dim I!
    I! = frmPressrun.MhRealInput2.Text - 0.005
    If I! < 0 Then I! = System_circumference# - 0.005
    frmPressrun.MhRealInput2.Text = I!

End Sub

Private Sub Command25_Click()

    'Toggle Numbering Auto/Manual
    If RegNumberingAuto% = 0 Then
        RegNumberingAuto% = 1
        frmPressrun!Label7.Visible = True
        Else
        RegNumberingAuto% = 0
        frmPressrun!Label7.Visible = False
    End If
    VarChangeFlag%(7) = 1

End Sub

Private Sub Command26_Click()

    frmPressrun!Slider1.Value = frmPressrun!Slider1.Value + 10

End Sub

Private Sub Command27_Click()

    'Toggle Diecutting Auto/Manual
    If RegDiecuttingAuto% = 0 Then
        RegDiecuttingAuto% = 1
        frmPressrun!Label28.Visible = True
        Else
        RegDiecuttingAuto% = 0
        frmPressrun!Label28.Visible = False
    End If
    VarChangeFlag%(6) = 1

End Sub

Private Sub Command28_Click()

    Dim I!
    I! = frmPressrun.MhRealInput6.Text + 0.1
    frmPressrun.MhRealInput6.Text = I!

End Sub

Private Sub Command29_Click()

    Dim I!
    I! = frmPressrun.MhRealInput6.Text - 0.1
    frmPressrun.MhRealInput6.Text = I!

End Sub
```

```
frmPressrun - 4

Private Sub Command30_Click()

    Dim I!
    I! = frmPressrun.MhRealInput6.Text + 0.005
    frmPressrun.MhRealInput6.Text = I!

End Sub

Private Sub Command31_Click()

    Dim I!
    I! = frmPressrun.MhRealInput6.Text - 0.005
    frmPressrun.MhRealInput6.Text = I!

End Sub

Private Sub Command32_Click()

    'Scrap Blower Control
    If ScrapRequest% = 0 Then
        ScrapRequest% = 1
        frmPressrun!Label30.Visible - True
        Else
        ScrapRequest% = 0
        frmPressrun!Label30.Visible - False
    End If

End Sub

Private Sub Command33_Click()

    'Numbering 1 Control
    Call Numbers1_Man_Toggle

End Sub

Private Sub Command34_Click()

    frmPressrun!Slider1.Value = frmPressrun!Slider1.Value - 10

End Sub

Private Sub Command35_Click()

    'Numbering 2 Control
    Call Numbers2_Man_Toggle

End Sub

Private Sub Command37_Click()

    Dim I!
    I! = frmPressrun.MhRealInput4.Text + 0.1
    If I! > (System_circumference# - 0.001) Then I! = 0
    frmPressrun.MhRealInput4.Text = I!

End Sub

Private Sub Command38_Click()

    Dim I!
    I! = frmPressrun.MhRealInput4.Text - 0.1
    If I! < 0 Then I! = System_circumference# - 0.1
    frmPressrun.MhRealInput4.Text = I!

End Sub
```

```
frmPressrun - b

Private Sub Command39_Click()

    Dim I!
    Ti - FrmPressrun.MhRealInput4.Text. + 0.005
    If Ti > (System_Circumference# - 0.001) Then Ti - 0
    FrmPressrun.MhRealInput4.Text. - Ti

End Sub

Private Sub Command40_Click()

    Dim I!
    Ti - FrmPressrun.MhRealInput4.Text. - 0.005
    If Ti < 0 Then Ti - System_Circumference# - 0.005
    FrmPressrun.MhRealInput4.Text. - Ti

End Sub

Private Sub Command7_Click()

    WhoseFocus% - 1 'This is calling module ID
    Pressruntrace%   4 'Set return address
    FrmNpad.Visible - True
    FrmNpadiText1.Text. - "" 'Start with null


End Sub

Private Sub Command8_Click()

    WhoseFocus% - 1 'This is calling module ID
    Pressruntrace%   3 'Set return address
    FrmNpad.Visible - True
    FrmNpadiText1.Text. - "" 'Start with null


End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    If KeyCode - &H76 Then
        WhoseFocus% - 5 'This is calling module ID
        Pressruntrace%   2 'Set return address
        FrmNpad.Visible - True
        FrmNpadiText1.Text. - "" 'Start with null
    End If

    If KeyCode - &H79 Then Call ExitPressrun

End Sub

Private Sub MhOddPic1_Click()

End Sub

Private Sub MhRealInput1_Click(Index As Integer)

    WhoseFocus%   1 'Caller ID
    Pressruntrace%   Index% + 5 'Variable ID
    FrmNpad.Visible - True
    FrmNpadiText1.Text. - "" 'Clear buffer

End Sub

Private Sub MhRealInput2_Change()

    'Numbering register offset changed
```

```
frmProcsrun - 6

    VarChangeFlag%(2) = 1

End Sub

Private Sub MiReadInput2_Click()

    WhoseFocus% = 1 'Caller ID
    Processrun.Tag% = 2 'Numbering register offset.
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MiReadInput3_Change()

    'Trigger register offset changed
    VarChangeFlag%(0) = 1

End Sub

Private Sub MiReadInput3_Click()

    WhoseFocus% = 1 'Caller ID
    Processrun.Tag% = 1 'Trigger register offset.
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MiReadInput4_Change()

    'Flexo register offset changed
    VarChangeFlag%(43) = 1

End Sub

Private Sub MiReadInput4_Click()

    WhoseFocus% = 1 'Caller ID
    Processrun.Tag% = 16 'Flexo register offset.
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MiReadInput5_Change()

    'Cutoff register offset changed
    VarChangeFlag%(5) = 1

End Sub

Private Sub MiReadInput5_Click()

    WhoseFocus% = 1 'Caller ID
    Processrun.Tag% = 5 'Cutoff register offset.
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MiReadInput6_Change()

    'Dimming register offset changed
    VarChangeFlag%(1) = 1

End Sub
```

```
frmPressrun   ?

Private Sub MSComm1_OnComm()

    WhoseFocus% = 1 'Caller ID
    Pressruntrace% = 17 'Dismantling register offset
    frmMsgBox.Visible = True
    frmMsgBox!Text1.Text = "" 'Clear buffer

End Sub

Private Sub Slider1_Change()

    frmPressrun!Text2.Text = frmPressrun!Slider1.Value
    frmP00Pleno!Text2.Text = frmPressrun!Text2.Text
    frmP00Pleno!Slider1.Value = frmPressrun!Slider1.Value

End Sub

Private Sub Text1_Change()

    'Update other screens setpoint speed fields
    frmStatus!Text1.Text = frmPressrun!Text2.Text
    frmP00Tmsg1o!Text2.Text = frmPressrun!Text2.Text
    TargetLinSpeed% = frmPressrun!Text2.Text
    VarChange%(5) = 1

End Sub

Private Sub Text1_Click()

    WhoseFrame% = 1 'This is calling module ID
    Pressruntrace% = 1 'Set return address
    frmMsgBox.Visible = True
    frmMsgBox!Text1.Text = "" 'Start with null

End Sub
```

```
frmP00Intaglio - 1

Option Explicit

Private Sub Command10_Click()

    ExitIntaglioSetup

End Sub


Private Sub Command13_Click()

    'Set Wiping rewinder to manual
    WipingWinderEna% = 1
    frmP00Intaglio!Label57.Visible = False
    frmP00Intaglio!Label7.Visible = True
    frmP00Intaglio!Label5.Visible = False

End Sub

Private Sub Command14_Click()

    'Turn hydraulics to low
    frmP00Intaglio!Label52.Visible = True
    frmP00Intaglio!Label51.Visible = False
    frmP00Intaglio!Label53.Visible = False
    Hydraulics% = 1

End Sub

Private Sub Command18_Click()

    'Turn hydraulics off
    frmP00Intaglio!Label53.Visible = True
    frmP00Intaglio!Label51.Visible = False
    frmP00Intaglio!Label52.Visible = False
    Hydraulics% = 2

End Sub

Private Sub ExitIntaglioSetup()

    frmP00Intaglio.Visible = False
    P00Intagliotrace% = 0 'Clear return flag
    frmMain.Text1.Text = "Standby"
    frmMain.SetFocus

End Sub

Private Sub Command30_Click()

    Call Hyd_Init_Off

End Sub

Private Sub Command11_Click()

    'Intaglio Inker #1 mode: Manual
    If MachineRunning% = 0 Then
        IntaglioInker1Control% = 1
        frmP00Intaglio!Label43.Visible = True
        frmP00Intaglio!Label42.Visible = False
        frmP00Intaglio!Label44.Visible = False
        frmP00Intaglio!Command12.Enabled = True
        frmP00Intaglio!Command32.Enabled = True
        VarChangeFlag%(34) = 1
    End If
```

```
frmP00Intaglio - 2

End Sub

Private Sub Command12_Click()

    Call InkerIrun_Man_Toggle

End Sub

Private Sub Command15_Click()

    'Intaglio Inker #1 mode: Auto
    If MachineRunning% = 0 Then
        IntaglioInker1Control% = 2
        frmP00Intaglio!Label44.Visible = True
        frmP00Intaglio!Label43.Visible = False
        frmP00Intaglio!Label42.Visible = False
        VarChangeFlag%(34) = 1
        IntaglioInker1nip% = 0
        IntaglioInker1Manrun% = 0
        frmP00Intaglio!Label26.Visible = False
        frmP00Intaglio!Label27.Visible = False
        frmP00Intaglio!Command12.Enabled = False
        frmP00Intaglio!Command32.Enabled = False
    End If

End Sub

Private Sub Command16_Click()

    Call IntInker1_Init_Off

End Sub

Private Sub Command17_Click()

    Call IntImps_Init_Off

End Sub

Private Sub Command19_Click()

    'Intaglio Impression mode: Auto
    If MachineRunning% = 0 Then
        IntaglioImpsControl% = 2
        frmP00Intaglio!Label6.Visible = True
        frmP00Intaglio!Label8.Visible = False
        frmP00Intaglio!Label9.Visible = False
        VarChangeFlag%(36) = 1
        If IntaglioImpsManual% <> 0 Then
            IntaglioImpsManual% = 0
            frmP00Intaglio!Label19.Visible = False
        End If
    frmP00Intaglio!Command22.Enabled = False
    End If

End Sub

Private Sub Command20_Click()

    'Intaglio Impression mode: Manual
    If MachineRunning% = 0 Then
        IntaglioImpsControl% = 1
        frmP00Intaglio!Label8.Visible = True
        frmP00Intaglio!Label9.Visible = False
        frmP00Intaglio!Label6.Visible = False
        frmP00Intaglio!Command22.Enabled = True
        VarChangeFlag%(36) = 1
```

```
frmP00Intaglio - 3

    End If

End Sub

Private Sub Command21_Click()

    Call IntWipe_Init_Off

End Sub

Private Sub Command22_Click()

    Call IntTmps_Man_Toggle

End Sub

Private Sub Command23_Click()

    'Intaglio Wiping mode: Auto
    If MachineRunning% = 0 Then
        IntaglioWipeControl% = 2
        frmP00Intaglio!Label13.Visible = True
        frmP00Intaglio!Label14.Visible = False
        frmP00Intaglio!Label15.Visible = False
        VarChangeFlag%(37) = 1
        If IntaglioWipeManual% <> 0 Then
            IntaglioWipeManual% = 0
            frmP00Intaglio!Label16.Visible = False
        End If
        frmP00Intaglio!Command25.Enabled = False
    End If

End Sub

Private Sub Command24_Click()

    'Intaglio Wiping mode: Manual
    If MachineRunning% = 0 Then
        IntaglioWipeControl% = 1
        frmP00Intaglio!Label14.Visible = True
        frmP00Intaglio!Label15.Visible = False
        frmP00Intaglio!Label13.Visible = False
        frmP00Intaglio!Command25.Enabled = True
        VarChangeFlag%(37) = 1
    End If

End Sub

Private Sub Command25_Click()

    Call IntWipe_Man_Toggle

End Sub

Private Sub Command26_Click()

    Call IntPrewipe_Init_Off

End Sub

Private Sub Command27_Click()

    'Intaglio Prewipe mode: Auto
    If MachineRunning% = 0 Then
        IntaglioPrewipeControl% = 2
        frmP00Intaglio!Label18.Visible = True
        frmP00Intaglio!Label20.Visible = False
```

```
frmP00Intaglio - 4

        frmP00Intaglio!Label21.Visible = False
        VarChangeFlag%(38) = 1
        If IntaglioPrewipeManual% <> 0 Then
            IntaglioPrewipeManual% = 0
            frmP00Intaglio!Label22.Visible = False
        End If
        frmP00Intaglio!Command29.Enabled = False
    End If

End Sub

Private Sub Command28_Click()

    'Intaglio Prewipe mode: Manual
    If MachineRunning% = 0 Then
        IntaglioPrewipeControl% = 1
        frmP00Intaglio!Label20.Visible = True
        frmP00Intaglio!Label21.Visible = False
        frmP00Intaglio!Label18.Visible = False
        frmP00Intaglio!Command29.Enabled = True
        VarChangeFlag%(38) = 1
    End If

End Sub

Private Sub Command29_Click()

    Call TntPrewipe_Man_Toggle

End Sub


Private Sub Command31_Click()

    'Set Wiping rewinder to auto
    WipingWinderEna% = 2
    frmP00Intaglio!Label57.Visible = False
    frmP00Intaglio!Label7.Visible = False
    frmP00Intaglio!Label5.Visible = True

End Sub

Private Sub Command32_Click()

    Call TnkerInip_Man_Toggle

End Sub

Private Sub Command33_Click()

    Call TntInker2_Init_Off

End Sub

Private Sub Command34_Click()

    'Intaglio Inker #2 mode: Auto
    If MachineRunning% = 0 Then
        IntaglioInker2Control% = 2
        frmP00Intaglio!Label32.Visible = True
        frmP00Intaglio!Label33.Visible = False
        frmP00Intaglio!Label34.Visible = False
        VarChangeFlag%(35) = 1
        IntaglioInker2nip% = 0
        IntaglioInker2Manrun% = 0
        frmP00Intaglio!Label41.Visible = False
        frmP00Intaglio!Label45.Visible = False
```

```
frmP00Intaglio = 5

        frmP00Intaglio!Command36.Enabled = False
        frmP00Intaglio!Command37.Enabled = False
    End If

End Sub

Private Sub Command35_Click()

    'Intaglio Inker #2 mode: Manual
    If MachineRunning% = 0 Then
        IntaglioInker2Control% = 1
        frmP00Intaglio!Label33.Visible = True
        frmP00Intaglio!Label34.Visible = False
        frmP00Intaglio!Label32.Visible = False
        frmP00Intaglio!Command36.Enabled = True
        frmP00Intaglio!Command37.Enabled = True
        VarChangeFlag%(35) = 1
    End If

End Sub

Private Sub Command36_Click()

    Call Inker2run_Man_Toggle

End Sub

Private Sub Command37_Click()

    Call Inker2nip_Man_Toggle

End Sub

Private Sub Command30_Click()

    'Set Wiping rewinder to off
    WipingWinderEna% = 0
    frmP00Intaglio!Label57.Visible = True
    frmP00Intaglio!Label17.Visible = False
    frmP00Intaglio!Label15.Visible = False

End Sub

Private Sub Command6_MouseDown(Button As Integer, Shift As Integer, X As Single, Y As Single)

    ProductCalReq$% = True
    VarChangeFlag%(24) = 1

End Sub

Private Sub Command6_MouseUp(Button As Integer, Shift As Integer, X As Single, Y As Single)

    ProductCalReq$% = False
    VarChangeFlag%(24) = 1

End Sub

Private Sub Command7_MouseDown(Button As Integer, Shift As Integer, X As Single, Y As Single)

    WipingCalReq$% = True
    VarChangeFlag%(25) = 1

End Sub

Private Sub Command7_MouseUp(Button As Integer, Shift As Integer, X As Single, Y As Single)

    WipingCalReq$% = False
```

```
frmP00Intaglio = 6

    VarChangeFlag%(29) = 1

End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    If KeyCode = vbF5 Then Call ExitIntaglioSetup

End Sub


Private Sub MhRealInput5_Click()

    WhoseFocus% = 6 'Caller ID
    P00IntaglioParm% = 5 'Press repeat length
    frmNumPad.Visible = True
    frmNumPad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput6_Click()

    WhoseFocus% = 6 'Caller ID
    P00IntaglioParm% = 6 'Intaglio repeat factor
    frmNumPad.Visible = True
    frmNumPad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub Label54_Click()

End Sub

Private Sub Slider1_Change()

    'Manual Speed value Inker #1
    frmP00Intaglio!MhRealInput2.Text = frmP00Intaglio!Slider1.Value
    VarChangeFlag%(31) = 1

End Sub

Private Sub Slider2_Change()

    'Auto Speed trim Inker #1
    frmP00Intaglio!MhRealInput1.Text = frmP00Intaglio!Slider2.Value
    VarChangeFlag%(30) = 1

End Sub

Private Sub Slider3_Change()

    'Auto Speed trim Inker #2
    frmP00Intaglio!MhRealInput3.Text = frmP00Intaglio!Slider3.Value
    VarChangeFlag%(32) = 1

End Sub

Private Sub Slider4_Change()

    'Manual Speed value Inker #2
    frmP00Intaglio!MhRealInput4.Text = frmP00Intaglio!Slider4.Value
    VarChangeFlag%(33) = 1

End Sub

Private Sub Slider5_Change()
```

```
frmMainDialog.Hide

    'Write wiper speed trim value to display
    frmMainDialog.lblWiperSpeedTrimValue.Text = frmMainDialog.hsbSlider.Value

End Sub
```

```
frmP00Flexo - 1

Option Explicit

Private Sub Command1_Click()

    Call Newfile

End Sub

Private Sub Command10_Click()

    ExitP00Flexo

End Sub


Private Sub Command11_Click()

    'Flexo Impression mode: Manual
    If MachineRunning% = 0 Then
        FlexoImpsControl% = 1
        frmP00Flexo!Label2.Visible = True
        frmP00Flexo!Label1.Visible = False
        frmP00Flexo!Label6.Visible = False
        frmP00Flexo!Command22.Enabled = True
        VarChangeFlag%(39) = 1
    End If

End Sub

Private Sub Command12_Click()

    'Flexo Impression mode: Auto
    If MachineRunning% = 0 Then
        FlexoImpsControl% = 2
        frmP00Flexo!Label6.Visible = True
        frmP00Flexo!Label1.Visible = False
        frmP00Flexo!Label2.Visible = False
        VarChangeFlag%(39) = 1
        If FlexoImpsManual% <> 0 Then
            FlexoImpsManual% = 0
            frmP00Flexo!Label19.Visible = False
        End If
    frmP00Flexo!Command22.Enabled = False
    End If

End Sub

Private Sub Command13_Click()

    'Flexo Impression mode: Off
    If MachineRunning% = 0 Then
        FlexoImpsControl% = 0
        frmP00Flexo!Label1.Visible = True
        frmP00Flexo!Label2.Visible = False
        frmP00Flexo!Label6.Visible = False
        VarChangeFlag%(39) = 1
        If FlexoImpsManual% <> 0 Then
            FlexoImpsManual% = 0
            frmP00Flexo!Label19.Visible = False
        End If
        frmP00Flexo!Command22.Enabled = False
    End If

End Sub

Private Sub Command14_Click()
```

```
frmP00Flexo   2

    'Toggle the Cutoff Unit Enable
    If MachineRunning% = 0 Then
        If CutoffEnable% = 0 Then 'We're offline
            frmP00Flexo!Label16.BackColor = &H00FF00
            CutoffEnable% = 1
            Else
            frmP00Flexo!Label16.BackColor = &H00FFFF
            CutoffEnable% = 0
        End If
        VarChangeFlag%(28) = 1
    End If

End Sub

Private Sub Command17_Click()

    'Toggle the guard bypass switch
    If GuardsBypassed% = 0 Then
        GuardsBypassed% = 1
        frmP00Flexo!Label36.Visible = True
        Else
        GuardsBypassed% = 1
        frmP00Flexo!Label36.Visible = False
    End If

End Sub

Private Sub Command18_MouseDown(Button As Integer, Shift As Integer, X As Single, Y As Single)

    'Clear ALL calibration flags
    MachineCalibrated% = 0
    frmP00Flexo!Label37.Visible = True

End Sub

Private Sub Command18_MouseUp(Button As Integer, Shift As Integer, X As Single, Y As Single)

    'Turn off light
    frmP00Flexo!Label37.Visible = False

End Sub

Private Sub Command19_Click()

    'Set System Mode to Combination mode
    If MachineRunning% = 0 Then
        SysMode% = 2
        IntInfeedEnable% = 1
        IntShuttleEnable% = 1
        IntOutfeedEnable% = 1
        IntChillrollEnable% = 1
        IntWipingEnable% = 1
        VarChangeFlag%(4) = 1
        frmP00Flexo!Label40.Visible = True
        frmP00Flexo!Label41.Visible = False
        frmP00Flexo!Label42.Visible = False
    End If

End Sub

Private Sub Command2_Click()

    Call Openfile

End Sub

Private Sub Command20_Click()
```

```
frmP00Flexo   3

    'Set System Mode to Flexo only
    If MachineRunning% = 0 Then
        SysMode% = 0
        IntInfeedEnable% = 0
        IntShuttleEnable% = 0
        IntOutfeedEnable% = 0
        IntChillrollEnable% = 0
        IntWipingEnable% = 0
        VarChangeFlag%(4) = 1
        frmP00Flexo!Label42.Visible = True
        frmP00Flexo!Label41.Visible = False
        frmP00Flexo!Label40.Visible = False
    End If

End Sub

Private Sub Command21_Click()

    'Set System Mode to Intaglio only
    If MachineRunning% = 0 Then
        SysMode% = 1
        IntInfeedEnable% = 1
        IntShuttleEnable% = 1
        IntOutfeedEnable% = 1
        IntChillrollEnable% = 1
        IntWipingEnable% = 1
        VarChangeFlag%(4) = 1
        frmP00Flexo!Label41.Visible = True
        frmP00Flexo!Label42.Visible = False
        frmP00Flexo!Label40.Visible = False
    End If

End Sub

Private Sub Command22_Click()

    'Flexo Imps manual control
    Call FlexoImps_Man_Toggle

End Sub

Private Sub Command25_Click()

    'Toggle the Numbering Unit Enable
    If MachineRunning% = 0 Then
        If NumberingEnable% = 0 Then 'We're offline
            frmP00Flexo!Label13.BackColor = &H00FF00
            NumberingEnable% = 1
            Else
            frmP00Flexo!Label13.BackColor = &H00FFFF
            NumberingEnable% = 0
        End If
        VarChangeFlag%(27) = 1
    End If

End Sub

Private Sub Command26_Click()

    frmPressrun!Slider1.Value = frmPressrun!Slider1.Value + 10
    frmP00Flexo!Slider1.Value = frmPressrun!Slider1.Value

End Sub

Private Sub Command27_Click()
```

```
frmP00Flexo   4

    'Toggle the Diecutting Unit Enable
    If MachineRunning% = 0 Then
        If DiecuttingEnable% = 0 Then 'We're offline
            frmP00Flexo!Label15.BackColor = &H00FF00
            DiecuttingEnable% = 1
            Else
            frmP00Flexo!Label15.BackColor = &H00FFFF
            DiecuttingEnable% = 0
        End If
        VarChangeFlag%(26) = 1
    End If

End Sub

Private Sub Command3_Click()

    Call SaveFile

End Sub

Private Sub Command34_Click()

    frmPressrun!Slider1.Value = frmPressrun!Slider1.Value - 10
    frmP00Flexo!Slider1.Value = frmPressrun!Slider1.Value

End Sub

Private Sub Command4_Click()

    Call SaveAsFile

End Sub

Private Sub ExitP00Flexo()

    Dim I%

    P00Flexotrace% = 0 'Clear return path
    frmP00Flexo.Visible = False
    frmMain!Text1.Text = "Standby"

End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    If KeyCode = &H70 Then Call Newfile
    If KeyCode = &H71 Then Call Openfile
    If KeyCode = &H72 Then Call SaveFile
    If KeyCode = &H73 Then Call SaveAsFile
    If KeyCode = &H79 Then Call ExitP00Flexo

End Sub

Private Sub Newfile()

    'This procedure initializes all variables for a new
    'job.

    Dim I%

    WhoseFocus% = 2 'Tell Apad to come back to us
    P00Flexotrace% = 1 'Return path

    frmApad!Text1.Text = ""
    frmApad.Visible = True

End Sub
```

```
frmPOOFlexo
End

Private Sub OpenFile()

    'This procedure loads an existing job profile from disk

    Dim I%

    WhoseFocus% = 2 'Tell Apad to come back to us
    POOFlexoTrace% = 2 'Return path

    frmApad!Text1.Text = ""
    frmApad.Visible = True

End Sub

Private Sub SaveAsFile()

    'This procedure saves the current job profile data to a
    'user defined filename.

    Dim I%

    WhoseFocus% = 2 'Tell Apad to come back to us
    POOFlexoTrace% = 4 'Return path

    frmApad!Text1.Text = ""
    frmApad.Visible = True


End Sub

Private Sub SaveFile()

    'This procedure saves the current job profile to disk

    Dim I%
    I% = SaveJobData%()

End Sub

Private Sub MhNumInput5_Change()

End Sub

Private Sub MhNumInput5_Click()

    WhoseFocus% = 2 'Caller ID
    POOFlexoTrace% = 1 'Press repeat length
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhNumInput6_Change()

End Sub

Private Sub MhNumInput6_Click()

    WhoseFocus% = 2 'Caller ID
    POOFlexoTrace% = 2 'Intaglio repeat factor
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub Slider1_Change()
```

```
frmP00Flexo - 6

    frmPressrun!Slider1.Value = frmP00Flexo!Slider1.Value

End Sub

Private Sub Text5_Change()

    'Update other screens speed field

    frmPressrun!Text5.Text = frmP00Flexo!Text5.Text
    FrmIstatus!Text5.Text = frmP00Flexo!Text5.Text
    frmP00InLogFile!Text5.Text = frmP00Flexo!Text5.Text

End Sub
```

```
frmMain   1

Option Explicit

Private Sub BeginIstatus()

    frmMain!Text1.Text = "Interlocks"

    FrmIstatus.Top = frmMain.Top + 1890
    FrmIstatus.Left = frmMain.Left + 30
    FrmIstatus.Visible = True

End Sub

Private Sub BeginPressRunning()

    frmMain!Text1.Text = "Run statistics"

    frmPressrun.Top = frmMain.Top + 1890
    frmPressrun.Left = frmMain.Left + 30
    frmPressrun.Visible = True

End Sub
Private Sub BeginParameter()

    If (SystemStatus% And 9) = 0 Then 'Not if we're in RUN or Pause
        frmParam.Top = frmMain.Top + 9925
        frmParam.Left = frmMain.Left + 30
        frmParam.Visible = True
        frmPassW.Visible = True
    End If

End Sub

Private Sub BeginProduction()

    If Param_tbl$(991, 2) = "0" Then

        FrmProduction.Top = frmMain.Top + 1890
        FrmProduction.Left = frmMain.Left + 30
        FrmProduction.Visible = True

        frmMain!Text1.Text = "Production Data"
    End If

End Sub

Private Sub BeginSetupFlexo()

    If Param_tbl$(989, 2) = "0" Then

        frmMain!Text1.Text = "Flexo setup"

        frmP00Flexo.Top = frmMain.Top + 1890
        frmP00Flexo.Left = frmMain.Left + 30
        frmP00Flexo.Visible = True

    End If

End Sub

Private Sub BeginSetupIntaglio()

    If Param_tbl$(989, 2) = "0" Then

        frmMain!Text1.Text = "Intaglio setup"

        frmP00Intaglio.Top = frmMain.Top + 1890
        frmP00Intaglio.Left = frmMain.Left + 30
```

```
frmMain - 2
        frmP00Intaglio.Visible = True
    End If
End Sub
Private Sub BeginUtilities()
    frmMain!Text1.Text = "Utilities"
    frmUtils.Top = frmMain.Top + 1890
    frmUtils.Left = frmMain.Left + 30
    frmUtils.Visible = True
End Sub
Private Sub Command1_Click()
    BeginPressRunning
End Sub
Private Sub Command10_Click()
    BeginParameter
End Sub
Private Sub Command2_Click()
    BeginProduction
End Sub
Private Sub Command3_Click()
    BeginSetupIntaglio
End Sub
Private Sub Command4_Click()
    BeginSetupFlexo
End Sub
Private Sub Command5_Click()
    BeginIstatus
End Sub
Private Sub Command9_Click()
    BeginUtilities
End Sub
Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)
    If KeyCode = &H70 Then BeginPressRunning
    If KeyCode = &H71 Then BeginProduction
    If KeyCode = &H72 Then BeginSetupIntaglio
    If KeyCode = &H73 Then BeginSetupFlexo
    If KeyCode = &H74 Then BeginIstatus
    If KeyCode = &H78 Then BeginUtilities
    If KeyCode = &H79 Then BeginParameter
```

```
frmMain - 3

End Sub

Private Sub Form_Load()

    Call Init_System
    Call PLC_FirstScan 'Initialize PLC registers

End Sub

Private Sub Timer1_Timer()

    'This is the motion delay timer
    'Used to warn operator of press movement - 2 seconds

    Startdelay% = 2 'Set the start delay flag
    frmMain!Timer1.Enabled = False

End Sub

Private Sub Timer2_Timer()

    Dim I%

    I% = SysPowerCheck%() 'Test Servo power status
    I% = AutoExec%() 'Call Master System RUN processor

End Sub

Private Sub Timer3_Timer()

    'This is the one second update calls; primarily updating
    'graphics on the operator console.

    Call Update_production_screen
    Call Update_pressrun_screen

End Sub

Private Sub Timer4_Timer()

    'Long term updates to Disk, etc. happen here
    'Timer is set for one minute updates


    Call WriteCounters
    Call SaveRolldata

End Sub

Private Sub Timer5_Timer()

    'This timer calls the PLC Scan routines. Loop time needs to be
    'in the neighborhood of 10mS.

    Call PLC_Scan

End Sub

Private Sub Timer6_Timer()

    'This timer is used to create a ride-thru time. It's the time that
    'motion can be re-initiated after a stop.

    Ridethrudelay% = 0 'Clear the wait flag
    frmMain!Timer6.Enabled = False
```

```
frmMain - 4
End Sub
```

```
FrmIstatus - 1

Option Explicit

Private Sub Command10_Click()

    Call ExitIstatus

End Sub

Private Sub ExitIstatus()

    FrmIstatus.Visible = False
    frmMain.Text1.Text = "Standby"
    frmMain.SetFocus

End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    If KeyCode = &H79 Then Call ExitIstatus

End Sub

Private Sub Timer1_Timer()

    Call UpdateIlockDisplay

End Sub

Public Sub UpdateIlockDisplay()

    'This procedure reads the appropriate status information and
    'updates the display. Timer set to refresh once per second.

    If PLC_I%(48) = 0 Then 'Unwinder Web break status
        FrmIstatus!Mh3dLabel1.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel1.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(49) = 0 Then 'Flexo Web break status
        FrmIstatus!Mh3dLabel2.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel2.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(50) = 0 Then 'Intaglio infeed Web break status
        FrmIstatus!Mh3dLabel3.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel3.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(17) = 0 Then 'Intaglio outfeed Web break status
        FrmIstatus!Mh3dLabel4.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel4.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(51) = 0 Then 'Chill Web break status
        FrmIstatus!Mh3dLabel5.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel5.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(52) = 0 Then 'Diecut Web break status
        FrmIstatus!Mh3dLabel6.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel6.FillColor = &H80FF00 'Green
```

FrmIstatus - 2

```
    End If

    If PLC_I%(41) = 0 Then 'Numbering Web break status
        FrmIstatus!Mh3dLabel7.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel7.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(18) = 0 Then 'Sheeter Web break status
        FrmIstatus!Mh3dLabel8.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel8.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(19) = 0 Then 'Wiping Web break status
        FrmIstatus!Mh3dLabel32.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel32.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(44) = 0 Then 'Sheeter Jamup status
        FrmIstatus!Mh3dLabel9.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel9.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(44) = 0 Then 'Folder Jamup status
        FrmIstatus!Mh3dLabel10.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel10.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(53) <> 0 Then 'Unwinder Core sensor status
        FrmIstatus!Mh3dLabel14.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel14.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(20) <> 0 Then 'Splice detector status
        FrmIstatus!Mh3dLabel15.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel15.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(28) <> 0 Then 'Shuttle motor #1 overtemp status
        FrmIstatus!Mh3dLabel16.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel16.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(29) <> 0 Then 'Shuttle motor #2 overtemp status
        FrmIstatus!Mh3dLabel17.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel17.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(0) <> 0 Then 'System ESTOP status
        FrmIstatus!Mh3dLabel18.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel18.FillColor = &H80FF00 'Green
    End If

    If PLC_O%(0) <> 0 Then 'Unwinder Dancer position status
        FrmIstatus!Mh3dLabel19.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel19.FillColor = &H80FF00 'Green
    End If
```

FrmIstatus - 3

```
    If PLC_I%(54) = 0 Then 'Delivery Piler Down LS status
        FrmIstatus!Mh3dLabel20.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel20.FillColor = &H80FF00 'Green
    End If

    If (0 = 0) Then 'At least one entry in perf table?
        FrmIstatus!Mh3dLabel31.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel31.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(45) = 0 Then 'Intaglio guard status
        FrmIstatus!Mh3dLabel11.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel11.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(46) = 0 Then 'Numbering guard status
        FrmIstatus!Mh3dLabel12.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel12.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(47) = 0 Then 'Sheeter guard status
        FrmIstatus!Mh3dLabel13.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel13.FillColor = &H80FF00 'Green
    End If

    If PLC_O%(0) = 0 Then 'Machine Power status
        FrmIstatus!Mh3dLabel21.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel21.FillColor = &H80FF00 'Green
    End If

    If PLC_O%(39) = 0 Then 'Product Vacuum Blower status
        FrmIstatus!Mh3dLabel22.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel22.FillColor = &H80FF00 'Green
    End If

    If PLC_O%(40) = 0 Then 'Wiping Vacuum Blower status
        FrmIstatus!Mh3dLabel23.FillColor = &H80FFFF 'Yellow
        Else
        FrmIstatus!Mh3dLabel23.FillColor = &H80FF00 'Green
    End If

    If PLC_I%(21) = 0 Then 'Hydraulic Pressure status
        FrmIstatus!Mh3dLabel25.FillColor = &HFF 'Red
        Else
        FrmIstatus!Mh3dLabel25.FillColor = &H80FF00 'Green
    End If

    If PLC_O%(41) = 0 Then 'Scrap Blower status status
        FrmIstatus!Mh3dLabel26.FillColor = &H80FFFF 'Yellow
        Else
        FrmIstatus!Mh3dLabel26.FillColor = &H80FF00 'Green
    End If

    If ProductCalibrated% = 255 Then 'Product Calibrated
        FrmIstatus!Mh3dLabel30.FillColor = &HFF8080   'Blue
        Else
        FrmIstatus!Mh3dLabel30.FillColor = &HE0E0E0   'Gray
    End If
```

```
FrmIstatus - 4

    If WipingCalibrated% = 255 Then 'Wiping Calibrated
        FrmIstatus!Mh3dLabel31.FillColor = &HFF8080  'Blue
        Else
        FrmIstatus!Mh3dLabel31.FillColor = &HE0E0E0  'Gray
    End If

End Sub
```

```
frmDiags = 1

Option Explicit

Private Sub AccessServo1()

    If EnableHostPolling1% = True Then
        If EnableHostPolling2% = False Then
            frmDiags!DMCTerminal2.DMCPollController = False
            frmDiags!DMCTerminal2.Visible = False
            EnableHostPolling2% = True
        End If
        'If the other Servo window was open, close it.
        frmDiags!DMCTerminal1.Visible = True
        frmDiags!DMCTerminal1.DMCPollController = True
        EnableHostPolling1% = False
        Else
        frmDiags!DMCTerminal1.DMCPollController = False
        frmDiags!DMCTerminal1.Visible = False
        EnableHostPolling1% = True
    End If

End Sub
Private Sub AccessServo2()

    If EnableHostPolling2% = True Then
        If EnableHostPolling1% = False Then
            frmDiags!DMCTerminal1.DMCPollController = False
            frmDiags!DMCTerminal1.Visible = False
            EnableHostPolling1% = True
        End If
        'If the other Servo window was open, close it.
        frmDiags!DMCTerminal2.Visible = True
        frmDiags!DMCTerminal2.DMCPollController = True
        EnableHostPolling2% = False
        Else
        frmDiags!DMCTerminal2.DMCPollController = False
        frmDiags!DMCTerminal2.Visible = False
        EnableHostPolling2% = True
    End If

End Sub

Private Sub Command1_Click()

    InitDForce

End Sub

Private Sub Command10_Click()

    ExitDiags

End Sub

Private Sub Command11_Click()

    'Danger: Stops all system timing !!!

    frmMain!Timer3.Enabled   False
    frmMain!Timer3.Enabled   False
    frmMain!Timer4.Enabled   False
    frmDiags!Label24.Visible = True
    frmDiags!Label41.Visible = False

End Sub

Private Sub Command12_Click()
```

```
frmDiags = 0

    'Danger: Enables all system timing !!!

    frmMain!Timer0.Enabled   True
    frmMain!Timer3.Enabled   True
    frmMain!Timer4.Enabled   True
    frmDiags!Label24.Visible = False
    frmDiags!Label41.Visible = True

End Sub

Private Sub Command2_Click()

    AccessServo1

End Sub

Private Sub ExitDiags()

    frmDiags.Visible = False
    Timer1.Enabled   False
    Unload frmDiags

    If (SystemStatus And 8) = 0 Then
        frmMain!Text1.Text = "Standby"
    End If

End Sub

Private Sub Command3_Click()

    AccessServo2

End Sub

Private Sub Command4_Click()

    DisablePLC

End Sub

Private Sub Command5_Click()

    EnablePLC

End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    If KeyCode = &H70 Then Call TuiDForce
    If KeyCode = &H71 Then Call AccessServo1
    If KeyCode = &H72 Then Call AccessServo2
    If KeyCode = &H73 Then Call DisablePLC
    If KeyCode = &H74 Then Call EnablePLC
    If KeyCode = &H79 Then Call ExitDiags

End Sub

Private Sub InitDForce()

    Label20.Visible   True
    Text1.Visible   True
    Text1.Text   ""
    Text1.SetFocus

End Sub
```

```
frmDiags = 3

Private Sub Form_Load()

    Dim I%

    For I% = 0 To 3
        frmDiags.MSFlexGrid1.RowHeight(I%) = 218
        frmDiags.MSFlexGrid2.RowHeight(I%) = 218
    Next I%

    For I% = 0 To 7
        frmDiags.MSFlexGrid1.ColWidth(I%) = 525
        frmDiags.MSFlexGrid2.ColWidth(I%) = 525
    Next I%

End Sub

Private Sub Text1_KeyDown(KeyCode As Integer, Shift As Integer)

    Dim I%, J%, K%, L%, M$

    If KeyCode = &HD Then
        If Len(Text1.Text) > 1 Then
            I% = InStr(1, Text1.Text, " ") 'Look for the delimiter
            If I% <> 0 Then
                J% = Left(Text1.Text, I% - 1)  'this is the channel #
                M$ = Mid(Text1.Text, I% + 1, 2)  'this is the new state
                If TypeStr(1, "012", M$) Then 'Make sure we're receiving numeric
                    K% = Val(M$) 'Informal type conversion
                    Else
                    I% = 0
                    K% = 2 'This will force error
                End If
                If J% <= 64 And K% <= 1 Then
                    Call PioOut(J%, K%)  'Write the output
                    Else
                    I% = 0
                End If
            End If
            If I% = 0 Then
                MsgBox ("Invalid Parameters")
                Text1.Text = ""
            End If
        Else
        Label20.Visible = False
        Text1.Visible = False
        End If
    End If

End Sub

Private Sub Timer1_Timer()

    Call UpdateInputs 'Update the digital inputs
    Call UpdateOutputs 'Update the digital output matrix

End Sub

Private Sub UpdateInputs()

    Dim I%, J%, X%, L%

    X% = 0 'Initialize column pointer to 0
    Y% = 0 'Initialize row pointer to 0

    For I% = 0 To 63 'Loop for all inputs

        K% = PioIn(I%)  'Read the input
```

```
frmDiags = 0

        frmDiags.MSFlexGrid1.Col = K%
        frmDiags.MSFlexGrid1.Row = L%

        If J% = 0 Then
            frmDiags.MSFlexGrid1.Text = "OFF" 'Write the appropriate state
            Else
            frmDiags.MSFlexGrid1.Text = "ON"
        End If
        K% = K% + 1 'Increment the column pointer
        If K% > 7 Then
            K% = 0 'Reset column pointer
            L% = L% + 1 'Increment the row pointer
        End If
    Next I%

End Sub

Private Sub UpdateOutputs()
    Dim I%, J%, K%, L%, M%, N%

    K% = 0 'Initialize column pointer to 0
    L% = 0 'Initialize row pointer to 0

    M% = 1 'Start mask at 1
    For I% = 0 To 47 'Loop for all outputs

        J% = OutImage%(I%) And M% 'Read the output image
        frmDiags.MSFlexGrid2.Col = K%
        frmDiags.MSFlexGrid2.Row = L%

        If J% = 0 Then
            frmDiags.MSFlexGrid2.Text = "OFF" 'Write the appropriate state
            Else
            frmDiags.MSFlexGrid2.Text = "ON"
        End If
        K% = K% + 1 'Increment the column pointer
        M% = M% * 2 'Shift the mask bit left
        If K% > 7 Then
            K% = 0 'Reset column pointer
            L% = L% + 1 'Increment the row pointer
            M% = 1 'Reset the mask to 1
        End If
    Next I%

End Sub


Private Sub EnableDI()

    'Enable PLC

    frmDiags!Label29.Visible = False
    PLC_Number% = 1

End Sub

Private Sub DisableDI()

    'Disable PLC

    frmDiags!Label29.Visible = True
    PLC_Number% = 0

End Sub
```

```
frmConfig - 1

Option Explicit

Private Sub Command1_Click()

    Call Newfile

End Sub

Private Sub Command10_Click()

    ExitConfig

End Sub


Private Sub Command11_Click()

    'IP adjust negative 0.001

    frmConfig!MhRealInput6.Text = frmConfig!MhRealInput6.Text - 0.001

End Sub

Private Sub Command12_Click()

    'Update the IP calibration
    If frmConfig!Label2.Visible = True Then
        IP_offset# = 0
        frmConfig!MhRealInput6.Text = 0
        VarChangeFlag%(41) = 2
        frmConfig!Label2.Visible = True
    End If

End Sub

Private Sub Command12_MouseDown(Button As Integer, Shift As Integer, X As Single, Y As Single)

    If frmConfig!Label2.Visible = True Then
        frmConfig!Label12.Visible = True
    End If

End Sub

Private Sub Command12_MouseUp(Button As Integer, Shift As Integer, X As Single, Y As Single)

    frmConfig!Label12.Visible = False

End Sub

Private Sub Command13_Click()

    VarChangeFlag%(50) = 1
    'Clears the product calibrate flag

End Sub

Private Sub Command2_Click()

    Call Openfile

End Sub

Private Sub Command28_Click()

    'IP adjust posative 0.050
```

```
frmConfig - 2

    frmConfig!MhRealInput6.Text = frmConfig!MhRealInput6.Text + 0.05

End Sub

Private Sub Command29_Click()

    'IP adjust negative 0.050

    frmConfig!MhRealInput6.Text = frmConfig!MhRealInput6.Text - 0.05

End Sub

Private Sub Command3_Click()

    Call SaveFile

End Sub

Private Sub Command30_Click()

    'IP adjust positive 0.001

    frmConfig'MhRealInput6.Text = frmConfig!MhRealInput6.Text + 0.001

End Sub

Private Sub Command31_Click()

    'Initializes the IP calibration
    IP_offset# = 0
    frmConfig!MhRealInput6.Text = 0
    VarChangeFlag%(41) = 1
    frmConfig!Label2.Visible = True

End Sub

Private Sub Command4_Click()

    Call SaveAsFile

End Sub

Private Sub ExitConfig()

    Dim I%

    Configtrace% = 0 'Clear return path
    frmConfig.Visible = False
    frmMain!Text1.Text = "Standby"

End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    If KeyCode = &H70 Then Call Newfile
    If KeyCode = &H71 Then Call Openfile
    If KeyCode = &H72 Then Call SaveFile
    If KeyCode = &H73 Then Call SaveAsFile
    If KeyCode = &H79 Then Call ExitConfig

End Sub

Private Sub Newfile()

    'This procedure initializes all variables for a new
    'job.
```

```
frmConfig - ?

    Dim I%

    WhoseFocus% = 5 'Tell Apad to come back to us
    Configtrace% = 1 'Return path

    frmApad!Text1.Text = ""
    frmApad.Visible = True

End Sub

Private Sub Openfile()

    'This procedure loads an existing job profile from disk

    Dim I%

    WhoseFocus% = 5 'Tell Apad to come back to us
    Configtrace% = 2 'Return path

    frmApad!Text1.Text = ""
    frmApad.Visible = True

End Sub

Private Sub SaveAsFile()

    'This procedure saves the current job profile data to a
    'user defined filename.

    Dim I%

    WhoseFocus% = 5 'Tell Apad to come back to us
    Configtrace% = 4 'Return path

    frmApad!Text1.Text = ""
    frmApad.Visible = True

End Sub

Private Sub SaveFile()

    'This procedure saves the current job profile to disk

    Dim I%
    I% = SaveJobdata%()

End Sub


Private Sub MhRealInput1_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 9 'Cutoff window end
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput10_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 5 'Intaglio window end
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub
```

```
frmConfig - 4


Private Sub MhRealInput12_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 7 'Diecutting window end
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput15_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 10 'Begin winder torque
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput16_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 11 'End winder torque
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput3_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 4 'Intaglio window begin
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput4_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 6 'Diecutting window begin
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput5_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 8 'Cutoff window begin
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput6_Change()

    'Handle IP calibration changes

    Dim I#, J#

    J# = frmConfig!MhRealInput6.Text - IP_offset# 'Magnitude of change
    IP_Move% = MasCPI!(7) * J# 'Convert to counts
    VarChangeFlag%(42) = 1 'Make the change
    IP_offset# = frmConfig!MhRealInput6.Text

End Sub
```

```
frmConfig - 5

Private Sub MhRealInput7_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 1 'System circumference
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput8_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 2 'Numbering circumference
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub

Private Sub MhRealInput9_Click()

    WhoseFocus% = 5 'Caller ID
    Configtrace% = 3 'Cutoff circumference
    frmNpad.Visible = True
    frmNpad!Text1.Text = "" 'Clear buffer

End Sub
```

```
frmApad - 1
Option Explicit
Private Sub Command1_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "6"
End Sub
Private Sub Command10_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "4"
End Sub
Private Sub Command11_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "5"
End Sub
Private Sub Command12_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "1"
End Sub
Private Sub Command13_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "2"
End Sub
Private Sub Command14_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "U"
End Sub
Private Sub Command15_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "Y"
End Sub
Private Sub Command16_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "T"
End Sub
Private Sub Command17_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "R"
End Sub
Private Sub Command18_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "E"
End Sub
Private Sub Command19_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "W"
End Sub
```

```
frmApad - 2

Private Sub Command2_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "7"
End Sub
Private Sub Command20_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "="
End Sub
Private Sub Command21_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "+"
End Sub
Private Sub Command22_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "P"
End Sub
Private Sub Command23_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "O"
End Sub
Private Sub Command24_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "I"
End Sub
Private Sub Command26_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "A"
End Sub
Private Sub Command27_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "S"
End Sub
Private Sub Command28_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "D"
End Sub
Private Sub Command29_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "F"
End Sub
Private Sub Command3_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "8"
End Sub
```

```
frmApad - 3
Private Sub Command30_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "G"
End Sub
Private Sub Command31_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "H"
End Sub
Private Sub Command32_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "J"
End Sub
Private Sub Command33_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "K"
End Sub
Private Sub Command34_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "L"
End Sub
Private Sub Command36_Click()
    Apad_Text$ = frmApad!Text1.Text
    frmApad.Visible = False
    Call ProcessData
End Sub
Private Sub Command4_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "9"
End Sub
Private Sub Command40_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & ":"
End Sub
Private Sub Command41_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "."
End Sub
Private Sub Command42_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & ","
End Sub
Private Sub Command43_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "M"
End Sub
```

```
frmApad - 4

Private Sub Command44_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "N"
End Sub
Private Sub Command45_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "B"
End Sub
Private Sub Command46_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "V"
End Sub
Private Sub Command47_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "C"
End Sub
Private Sub Command48_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "X"
End Sub
Private Sub Command49_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "Z"
End Sub
Private Sub Command5_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "0"
End Sub
Private Sub Command55_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & " "
End Sub
Private Sub Command6_Click()
    frmApad!Text1.Text = frmApad!Text1.Text & "Q"
End Sub
Private Sub Command7_Click()
    Dim I%

    I% = Len(frmApad!Text1.Text)
    If I% < 1 Then I% = 1 'Prevent underflow.
    frmApad!Text1.Text = Left$(frmApad!Text1.Text, I% - 1)
End Sub
Private Sub Command9_Click()
```

```
frmApad - 5

    frmApad!Text1.Text = frmApad!Text1.Text & "3"

End Sub

Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)

    Dim I%


    If KeyCode = 8 Then
        I% = Len(frmApad.Text1.Text)
        If I% < 1 Then I% = 1 'Don't underrun the buffer
        frmApad.Text1.Text = Left$(frmApad!Text1.Text, I% - 1)
    Else

    If KeyCode = &HD Then  'Did they press Enter key
        Apad_Text$ = frmApad!Text1.Text
        frmApad.Visible = False
        Call ProcessData

        Else

            frmApad!Text1.Text = frmApad!Text1.Text & Chr$(KeyCode)

        End If
    End If


End Sub

Private Sub ProcessData()

    'This routine handles the incoming data

    Dim I%

    Select Case WhoseFocus% 'This is the ID of the calling routine

    Case 1 ' * * * * Calls from frmPressrun * * * *

    Case 2 ' * * * * Calls from frmP00Flexo * * * *
        Select Case P00Flexotrace%

        Case 3 'Returned with filename for Job Open
            If Apad_Text$ <> "" Then 'Did we get a value
                frmMain.Text6.Text = Apad_Text$
                I% = LoadJobdata%()
            End If

        Case 4 'Incoming filename for SaveAs
            If Apad_Text$ <> "" Then 'Value???
                frmMain.Text6.Text = Apad_Text$
                I% = SaveJobdata%()
            End If

        Case 5 'Filename for Newfile function
            If Apad_Text$ <> "" Then 'Value???
                frmP00Flexo.Text1.Text = Apad_Text$
                I% = NewJobData%()
            End If


        End Select 'End of Case 2

    Case 3 ' * * * * Parameters calls * * * *

        frmPtable.MSFlexGrid1.Text = Apad_Text$
```

frmApad - 6

```
    Case 4 ' * * * * * Production calls * * * * *

        Select Case Productiontrace%

        Case 2 'This is the operator ID
            If Apad_Text$ <> "" Then
                FrmProduction.Textl.Text = Apad_Text$
                frmMain.Text2.Text = Apad_Text$
            End If

        End Select 'End of Case 4

    Case 5 ' * * * * * Calls from frmConfig screen * * * * *
        Select Case Configtrace%

       Case 1 'Filename for Newfile function
            If Apad_Text$ <> "" Then 'Value???
                frmMain.Text6.Text = Apad_Text$
                I% = NewJobData%()
            End If
        Case 2 'Returned with filename for Job Open
            If Apad_Text$ <> "" Then 'Did we get a value
                frmMain.Text6.Text = Apad_Text$
                I% = LoadJobdata%()
            End If

        Case 4 'Incoming filename for SaveAs
            If Apad_Text$ <> "" Then 'Value???
                frmMain.Text6.Text = Apad_Text$
                I% = SaveJobdata%()
            End If

        End Select 'End of Case 5

    Case 6 ' * * * * * Calls from frmP00Intaglio

    End Select

End Sub
```

```
Module5 - 1

    'Program        : General
    'Creation date  : 20-Oct-00
    'Module         : AIODRV.BAS
    'Version        : V1.0
    'Edit           : -00
    'Edit date      : 25-Oct-00
    'Author         : Joseph B. Schutte III
    '                 Industrial Light & Motion, Inc.
    '                 2170 Van Blaricum Rd.
    '                 Cincinnati OH 45233  USA
    '
    'Copyright (C) 2000 Industrial Light & Motion, Inc.
    '
    'Revision History
    '
    'Ver/Edit   Edit date   Who     Reason
    '
    '
    'This module handles the I/O mapping through the AIO
    'card. Two primary operations are supported:
    '
    'AioInit -  Sub that initializes the AIO board and
    '           working variables.
    'AioIn%(x) - Function that returns the value of an
    '           input defined by x.  (NOT SUPPORTED IN THIS CARD)
    'AioOut(x,y)-Sub that sets the Output defined by X to
    '           the value y (bipolar).
    '

    'Analog Output assignments
    '
    'Channel    Description
    '   0       Main Drive velocity command
    '   1       Wiping Drive velocity command
    '   2       Wiping Rewinder velocity command
    '   3       Intaglio Inker #1 velocity command
    '   4       Intaglio Inker #2 velocity command
    '   5       Product Rewinder velocity command
    '   6       Not assigned
    '   7       Not assigned


    Global AnOut%(128)  'Analog OUT image registers
    Global AnIn%(128) 'Analog IN image registers

    Const IobaseAddr% = &HEF00 'This is the hardware base address
    Const IoCalAddr% = &HE800 'This is the address of calibration reg

    Declare Function MhInpByte Lib "MhMu32.DLL" _
                               (ByVal Port As Long) As Byte

    Declare Function MhInpWord Lib "MhMu32.DLL" _
                               (ByVal Port As Long) As Long

    Declare Sub MhOutByte Lib "MhMu32.DLL" _
                               (ByVal Port As Long, ByVal Valu As Byte)

    Declare Sub MhOutWord Lib "MhMu32.DLL" _
                               (ByVal Port As Long, _
                                ByVal Valu As Integer)


Function AioIn%(Addr%)

    Dim I%

    'Read the Analog Input register
```

Module5 - 2

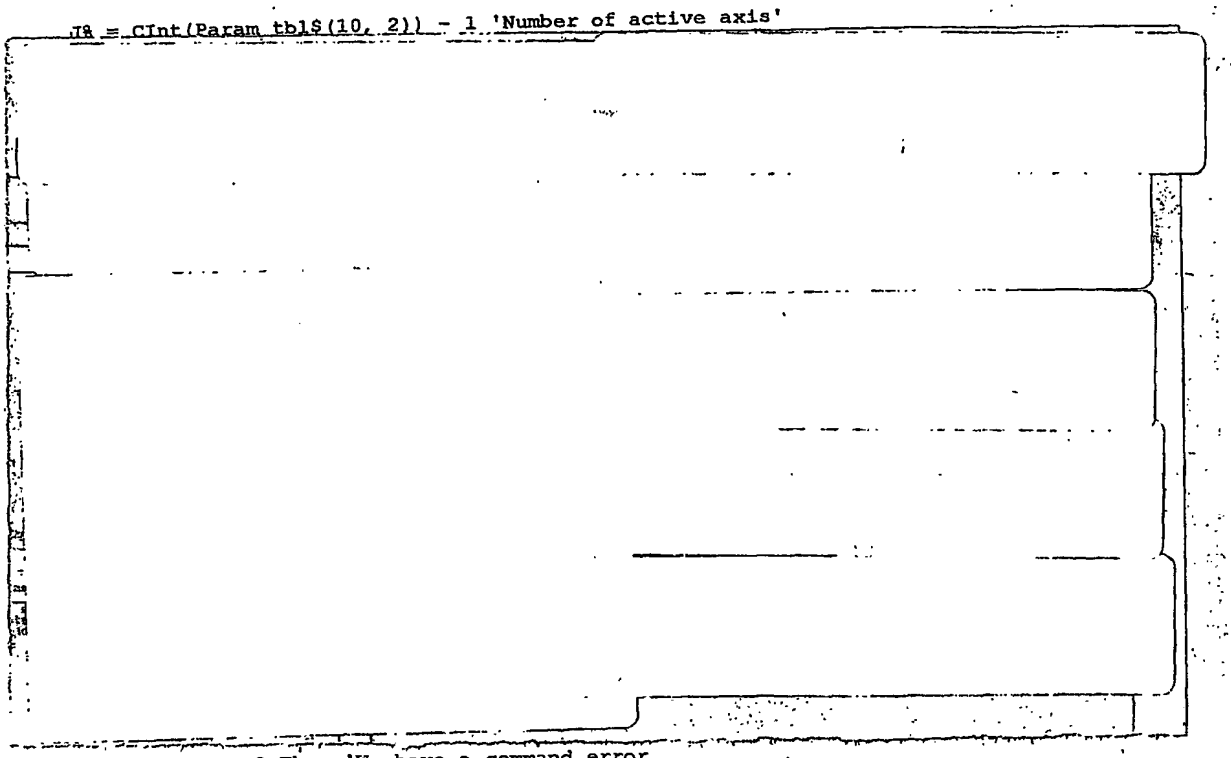
```
    'This function not supported in this version software

    'I% = MhInpByte(Addr%) 'Read the Hardware input

End Function
Public Sub AioInit()

    'This routine initializes the Analog output board. additional code
    'will be placed here to support Analog inputs.

    Dim I%

    I% = MhInpByte(IobaseAddr% + 10)
    'This read sets the card to Automatic update mode

    I% = MhInpByte(IobaseAddr% + 15)
    'This read unrestricts the output voltage range

    For I% = 0 To 8
        Call AioOut(I%, 0)
    Next I%

End Sub
Public Sub AioOut(Channel%, NuVal%)

    Dim H%, L%

    AnOut%(Channel%) = NuVal% 'Save the original value

    If NuVal% > 2047 Then NuVal% = 2047
    If NuVal% < -2047 Then NuVal% = -2047

    Call MhOutWord(IobaseAddr% + (Channel% * 2), NuVal% + &H800)

End Sub
```

```
Module4 - 1

    'Program        : General library module
    'Creation date  : 19-Oct-93
    'Module         : SERVODRV.BAS
    'Version        : V3.0
    'Edit           : -01
    'Edit date      : 26-Sep-00
    'Author         : Joseph B. Schutte III
    '                 Industrial Light & Motion, Inc.
    '                 2170 Van Blaricum Rd.
    '                 Cincinnati OH 45233  USA
    '
    ' Copyright (C) 1993-2000 Industrial Light & Motion, Inc.
    '
    '
    'Revision History
    '
    'Ver/Ed     Edit date   Who      Reason
    'V3.1-01    22-Sep-00   JBSIII   Mod code to access DMC-1080's (dual)
    'V3.0-00    02-Jan-00   JBSIII   Revamp code to support 2100 series and dual
    '                               motion processors, and various bugs
    'V2.1-02    27-Oct-99   JBSIII   Minor mods to support Ethernet based
    '                               2100 series controllers
    'V2.1-01    10-Jul-97   JBSIII   Add Boot Galil boot loader
    'V2.0-00    12-Feb-97   JBSIII   Major upgrade 32 bit / Win95 & NT
    'V1.0-01    28-Aug-94   JBSIII   Sense Estop & Reinit
    '
    '
    Option Explicit

Function CmdServo1%(S_command$)

    Dim I%, A$

    frmMain.DMCShell1.DMCCommand = S_command$
    A$ = LeftB$(frmMain.DMCShell1.DMCResponse, 1)
    If A$ = "?" Then
        CmdServo1% = -1 'Error occurred
        Else
        CmdServo1% = 0 'Transaction OK
    End If

End Function
Function CmdServo2%(S_command$)

    Dim I%, A$

    frmMain.DMCShell2.DMCCommand = S_command$
    A$ = LeftB$(frmMain.DMCShell2.DMCResponse, 1)
    If A$ = "?" Then
        CmdServo2% = -1 'Error occurred
        Else
        CmdServo2% = 0 'Transaction OK
    End If

End Function


Function GetServoErcode1%(SelAxis%)

    ' Get the Motion status of the specified Axis ( Processor A )

    Dim I%, J%

    I% = CmdServo1%("TC") 'Servo status command

    If I% <> 0 Then 'We received an error
        I% = -1 'Error flag
```

Module4 - 2

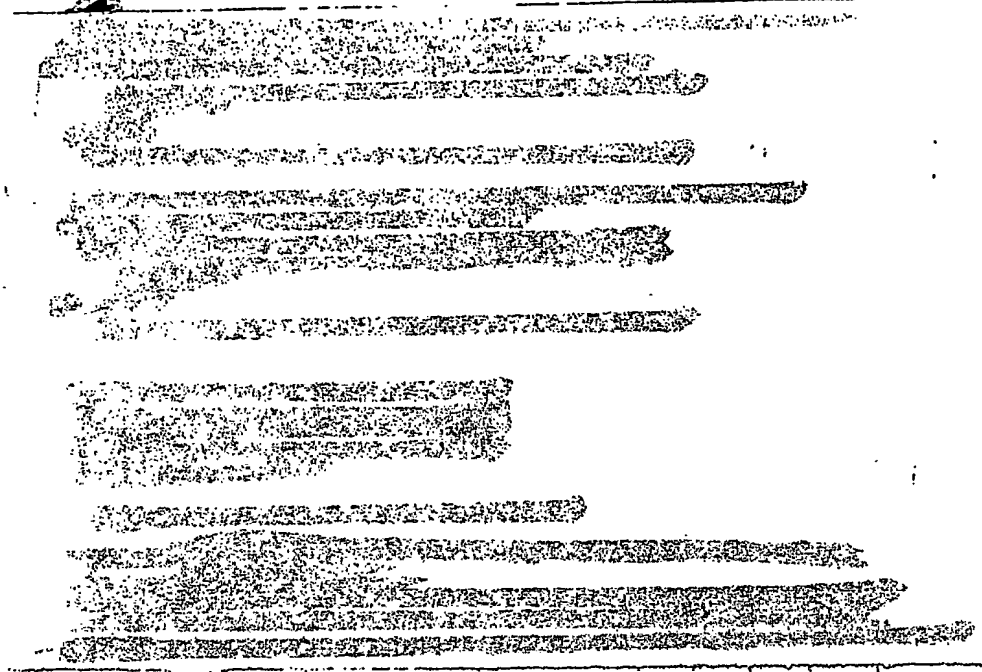
```
        Else
        }
    End If

    GetServoErcode1% = I%

End Function

Function GetServoErcode2%(SelAxis%)

    ' Get the Motion status of the specified Axis ( Processor B )

    Dim I%, J%

    I% = CmdServo2%("TC") 'Servo status command

    If I% <> 0 Then 'We received an error
        I% = -1 'Error flag
        Else


    End If

    GetServoErcode2% = I%

End Function

Function GetServoStatus%(SelAxis%)

    ' Get the Motion status of the specified Axis

    Dim I%, J%

    Select Case SelAxis% 'Vector to the requested Axis

        Case 0: I% = CmdServo1%("SC X") 'Axis 0
        Case 1: I% = CmdServo1%("SC Y") 'Axis 1
        Case 2: I% = CmdServo1%("SC Z") 'Axis 2
        Case 3: I% = CmdServo1%("SC W") 'Axis 3
        Case 4: I% = CmdServo1%("SC E") 'Axis 4
        Case 5: I% = CmdServo1%("SC F") 'Axis 5
        Case 6: I% = CmdServo1%("SC G") 'Axis 6
        Case 7: I% = CmdServo1%("SC H") 'Axis 7
        Case 8: I% = CmdServo2%("SC X") 'Axis 8
        Case 9: I% = CmdServo2%("SC Y") 'Axis 9
        Case 10: I% = CmdServo2%("SC Z") 'Axis 10
        Case 11: I% = CmdServo2%("SC W") 'Axis 11
        Case 12: I% = CmdServo2%("SC E") 'Axis 12
        Case 13: I% = CmdServo2%("SC F") 'Axis 13
        Case 14: I% = CmdServo2%("SC G") 'Axis 14
        Case 15: I% = CmdServo2%("SC H") 'Axis 15
       Case Else: I% = -1

    End Select

    If I% <> 0 Then 'We received an error
        I% = -1 'Error flag
        Else
        If I% <= 7 Then
            J% = InStr(1, frmMain.DMCShell1.DMCResponse, Chr$(13)) 'Find the delimiter
            I% = CInt(LeftB$(frmMain.DMCShell1.DMCResponse, J% - 1)) 'This is the returned statu
s from servo
            Else
            J% = InStr(1, frmMain.DMCShell2.DMCResponse, Chr$(13)) 'Find the delimiter
```

```
Module4 - 3
            I% = CInt(LeftB$(frmMain.DMCShell2.DMCResponse, J% - 1)) 'This is the returned statu
s from servo
        End If
    End If

    GetServoStatus% = I%

End Function

Sub InitPhase()

    'Set the Encoder and Motor phase here per Parameters

    Dim I%, J%, K%, L$, M$, N$, O$, Enc%, Mtr%

    I% = CInt(Param_tbl$(10, 2)) - 1 'Number of active axis'
```



```
        If K% <> 0 Then 'We have a command error
            MotionSystemStatus% = 255 'Fault flag
            MsgBox ("?Cmd Error during INIT-Phase " & Str$(I%))
        End If

    Next I%

End Sub

Function InitServo%()

    Dim base_address%, I%, J%, K%

    I% = 0
```

Module4 - 4



```
Testbypass:

End Function

Sub LoadGalilTuning()

    ' Initialize the Servo Gain Parameters

    Dim I%, J%, K%, L%

    L% = CInt(Param_tbl$(10, 2))
    For I% = 0 To (L% - 1) 'All axes
        If I% <= 7 Then
            J% = (I% + 1) * 100 'Base address for parameters
        Else
            J% = (I% + 3) * 100 'Base address with skip to upper addr
        End If

        'K% = WriteServoCmd%(I%, "GN", Param_tbl$(J% + 16, 2)) 'Load GN
        K% = WriteServoCmd%(I%, "IT", Param_tbl$(J% + 17, 2)) 'Load IT
        K% = WriteServoCmd%(I%, "VT", Param_tbl$(J% + 18, 2)) 'Load VT
        K% = WriteServoCmd%(I%, "FA", Param_tbl$(J% + 19, 2)) 'Load FA
        K% = WriteServoCmd%(I%, "AC", Param_tbl$(J% + 20, 2)) 'Load Accel
        K% = WriteServoCmd%(I%, "DC", Param_tbl$(J% + 20, 2)) 'Load Decel
        K% = WriteServoCmd%(I%, "FV", Param_tbl$(J% + 27, 2)) 'Load FA
        K% = WriteServoCmd%(I%, "KP", Param_tbl$(J% + 13, 2)) 'Load KP
        K% = WriteServoCmd%(I%, "KI", Param_tbl$(J% + 14, 2)) 'Load KI
        K% = WriteServoCmd%(I%, "KD", Param_tbl$(J% + 15, 2)) 'Load KD
        K% = WriteServoCmd%(I%, "PL", Param_tbl$(J% + 33, 2)) 'Load PL
        K% = WriteServoCmd%(I%, "IL", Param_tbl$(J% + 34, 2)) 'Load IL

    Next I%

End Sub

Function ReadServoData$(SelAxis%, OpCode$)
```

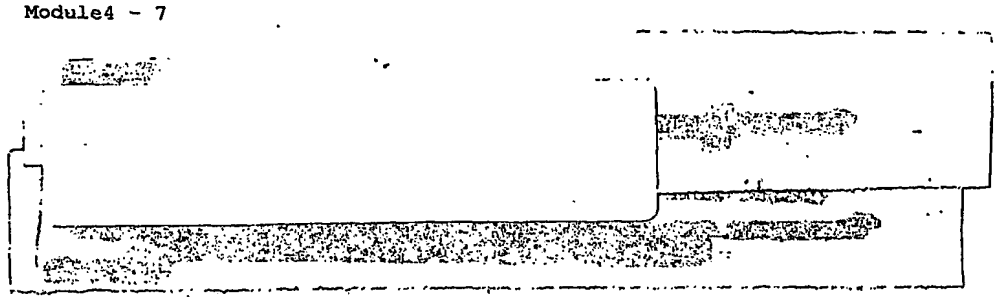
Module4 - 5

```
    'Routine issues command to Servo and returns string response

    ' Get the Motion status of the specified Axis

    Dim I%, J%, O$

    O$ = Mid$("XYZWEFGHXYZWEFGH", SelAxis% + 1, 1) 'Parse out the axis ID
    If SelAxis% <= 7 Then
        I% = CmdServo1%(OpCode$ & O$) 'Axis 0-7
        Else
        I% = CmdServo2%(OpCode$ & O$)  'Axis 8-15
    End If

    If I% <> 0 Then 'We received an error
        ReadServoData$ = "" 'Error flag
        Else
        If SelAxis% <= 7 Then
            J% = InStr(1, frmMain.DMCShell1.DMCResponse, Chr$(13)) 'Find the delimiter
            Else
            J% = InStr(1, frmMain.DMCShell2.DMCResponse, Chr$(13)) 'Find the delimiter
        End If
        If J% <> 0 Then 'We received a message
            If SelAxis% <= 7 Then
                ReadServoData$ = LeftB$(frmMain.DMCShell1.DMCResponse, J% - 1) 'This is the retu
rned status from servo #1
                Else
                ReadServoData$ = LeftB$(frmMain.DMCShell2.DMCResponse, J% - 1) 'This is the retu
rned status from servo #2
            End If
            Else
            ReadServoData$ = "" 'Nothing to reply
        End If
    End If

End Function

Function SysPowerCheck%()

    'Check Servo Power Supply Status

    Dim I%, J%, K%, L%, M$

    If (PLC_I%(0) <> 0) Then
        SysPowerCheck% = 0
        SystemStatus% = SystemStatus% Or &H100 'Power ON
        frmMain!Label1.Visible = False
        Else
        SysPowerCheck% = 1
        SystemStatus% = SystemStatus% And &HFEFF 'Power OFF
        frmMain!Label1.Visible = True
    End If

End Function

Function WriteServoCmd%(SelAxis%, OpCode$, Operand$)

    ' Routine to send a general command to an Axis

    Select Case SelAxis% 'Vector to the requested Axis

        Case 0: WriteServoCmd% = CmdServo1%(OpCode$ & "X=" & Operand$) 'Axis 0
        Case 1: WriteServoCmd% = CmdServo1%(OpCode$ & "Y=" & Operand$) 'Axis 1
        Case 2: WriteServoCmd% = CmdServo1%(OpCode$ & "Z=" & Operand$) 'Axis 2
        Case 3: WriteServoCmd% = CmdServo1%(OpCode$ & "W=" & Operand$) 'Axis 3
        Case 4: WriteServoCmd% = CmdServo1%(OpCode$ & "E=" & Operand$) 'Axis 4
        Case 5: WriteServoCmd% = CmdServo1%(OpCode$ & "F=" & Operand$) 'Axis 5
```

Module4 - 6

```
        Case 6: WriteServoCmd% = CmdServo1%(OpCode$ & "G=" & Operand$) 'Axis 6
        Case 7: WriteServoCmd% = CmdServo1%(OpCode$ & "H=" & Operand$) 'Axis 7
        Case 8: WriteServoCmd% = CmdServo2%(OpCode$ & "X=" & Operand$) 'Axis 8
        Case 9: WriteServoCmd% = CmdServo2%(OpCode$ & "Y=" & Operand$) 'Axis 9
        Case 10: WriteServoCmd% = CmdServo2%(OpCode$ & "Z=" & Operand$) 'Axis 10
        Case 11: WriteServoCmd% = CmdServo2%(OpCode$ & "W=" & Operand$) 'Axis 11
        Case 12: WriteServoCmd% = CmdServo2%(OpCode$ & "E=" & Operand$) 'Axis 12
        Case 13: WriteServoCmd% = CmdServo2%(OpCode$ & "F=" & Operand$) 'Axis 13
        Case 14: WriteServoCmd% = CmdServo2%(OpCode$ & "G=" & Operand$) 'Axis 14
        Case 15: WriteServoCmd% = CmdServo2%(OpCode$ & "H=" & Operand$) 'Axis 15
        Case Else: WriteServoCmd% = -1

    End Select

End Function

Function WriteServoXcmd%(SelAxis%, OpCode$)

    ' Routine to send a command to an Axis without data

    Select Case SelAxis% 'Vector to the requested Axis

        Case 0: WriteServoXcmd% = CmdServo1%(OpCode$ & " X") 'Axis 0
        Case 1: WriteServoXcmd% = CmdServo1%(OpCode$ & " Y") 'Axis 1
        Case 2: WriteServoXcmd% = CmdServo1%(OpCode$ & " Z") 'Axis 2
        Case 3: WriteServoXcmd% = CmdServo1%(OpCode$ & " W") 'Axis 3
        Case 4: WriteServoXcmd% = CmdServo1%(OpCode$ & " E") 'Axis 4
        Case 5: WriteServoXcmd% = CmdServo1%(OpCode$ & " F") 'Axis 5
        Case 6: WriteServoXcmd% = CmdServo1%(OpCode$ & " G") 'Axis 6
        Case 7: WriteServoXcmd% = CmdServo1%(OpCode$ & " H") 'Axis 7
        Case 8: WriteServoXcmd% = CmdServo2%(OpCode$ & " X") 'Axis 8
        Case 9: WriteServoXcmd% = CmdServo2%(OpCode$ & " Y") 'Axis 9
        Case 10: WriteServoXcmd% = CmdServo2%(OpCode$ & " Z") 'Axis 10
        Case 11: WriteServoXcmd% = CmdServo2%(OpCode$ & " W") 'Axis 11
        Case 12: WriteServoXcmd% = CmdServo2%(OpCode$ & " E") 'Axis 12
        Case 13: WriteServoXcmd% = CmdServo2%(OpCode$ & " F") 'Axis 13
        Case 14: WriteServoXcmd% = CmdServo2%(OpCode$ & " G") 'Axis 14
        Case 15: WriteServoXcmd% = CmdServo2%(OpCode$ & " H") 'Axis 15
        Case Else: WriteServoXcmd% = -1

    End Select

End Function
```

Module4 - 7



```
End Sub
Public Sub Load_app_variables()

    'Routine downloads the application variables held in the parameter
    'file

    Dim I%, J%, K%

    K% = LastAxis%
    If LastAxis% > 7 Then 'Setup for split table read
        K% = 7
        Else
        K% = LastAxis%
    End If

    For I% = 0 To K% 'Need to capture CPI's
        MasCPR!(I%) = CDbl(Param_tbl$(((I% + 1) * 100) + 2, 2))
        MasCPI!(I%) = CDbl(Param_tbl$(((I% + 1) * 100) + 2, 2)) / CDbl(Param_tbl$(((I% + 1) * 10
0) + 32, 2))
    Next I%

    If LastAxis% > 7 Then 'Get the CPI's for the high # axis'

        For I% = 8 To LastAxis% 'Need to capture CPI's
            MasCPR!(I%) = CDbl(Param_tbl$(300 + (I% * 100) + 2, 2))
            MasCPI!(I%) = CDbl(Param_tbl$(300 + (I% * 100) + 2, 2)) / CDbl(Param_tbl$(300 + (I%
* 100) + 32, 2))
        Next I%
    End If

    'MasCPI!(7) = MasCPR!(7) / CDbl(frmSCsetup!MhRealInput4.Text)
    'CPI based on repeat length

    J% = 0
    J% = J% + CmdServo1%("AxisAAC=" & Param_tbl$(120, 2))
    J% = J% + CmdServo1%("AxisBAC=" & Param_tbl$(220, 2))
    J% = J% + CmdServo1%("AxisCAC=" & Param_tbl$(320, 2))
    J% = J% + CmdServo1%("AxisDAC=" & Param_tbl$(420, 2))
    J% = J% + CmdServo1%("AxisEAC=" & Param_tbl$(520, 2))
    J% = J% + CmdServo1%("AxisFAC=" & Param_tbl$(620, 2))
    J% = J% + CmdServo1%("AxisGAC=" & Param_tbl$(720, 2))
    J% = J% + CmdServo1%("AxisHAC=" & Param_tbl$(820, 2))
    'J% = J% + CmdServo2%("AxisIAC=" & Param_tbl$(1120, 2))
    'J% = J% + CmdServo2%("AxisJAC=" & Param_tbl$(1220, 2))
    'J% = J% + CmdServo2%("AxisKAC=" & Param_tbl$(1320, 2))
    'J% = J% + CmdServo2%("AxisLAC=" & Param_tbl$(1420, 2))
    'J% = J% + CmdServo2%("AxisMAC=" & Param_tbl$(1520, 2))
    'J% = J% + CmdServo2%("AxisNAC=" & Param_tbl$(1620, 2))
    'J% = J% + CmdServo2%("AxisOAC=" & Param_tbl$(1720, 2))
    'J% = J% + CmdServo2%("AxisPAC=" & Param_tbl$(1820, 2))

    J% = J% + CmdServo1%("CPRA=" & Param_tbl$(102, 2)) 'Counts per rev
    J% = J% + CmdServo1%("CPRB=" & Param_tbl$(202, 2))
    J% = J% + CmdServo1%("CPRC=" & Param_tbl$(302, 2))
    J% = J% + CmdServo1%("CPRD=" & Param_tbl$(402, 2))
```

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```
    J$ = J$ + CmdServo1$("CPRE=" & Param_tbl$(502, 2))
    J$ = J$ + CmdServo1$("CPRF=" & Param_tbl$(602, 2))
    J$ = J$ + CmdServo1$("CPRG=" & Param_tbl$(702, 2))
    J$ = J$ + CmdServo1$("CPRH=" & Param_tbl$(802, 2))
    J$ = J$ + CmdServo2$("CPRDX=" & Param_tbl$(802, 2))
    J$ = J$ + CmdServo2$("CPRI=" & Param_tbl$(1102, 2))
    J$ = J$ + CmdServo2$("CPRJ=" & Param_tbl$(1202, 2))
    J$ = J$ + CmdServo2$("CPRK=" & Param_tbl$(1302, 2))
    J$ = J$ + CmdServo2$("CPRL=" & Param_tbl$(1402, 2))
    'J$ = J$ + CmdServo2$("CPRM=" & Param_tbl$(1502, 2))
    'J$ = J$ + CmdServo2$("CPRN=" & Param_tbl$(1602, 2))
    'J$ = J$ + CmdServo2$("CPRO=" & Param_tbl$(1702, 2))
    'J$ = J$ + CmdServo2$("CPRP=" & Param_tbl$(1802, 2))

    'J$ = J$ + CmdServo1$("AHoffA=" & Param_tbl$(106, 2)) 'ABS Home offsets
    'J$ = J$ + CmdServo1$("AHoffB=" & Param_tbl$(206, 2))
    'J$ = J$ + CmdServo1$("AHoffC=" & Param_tbl$(306, 2))
    'J$ = J$ + CmdServo1$("AHoffD=" & Param_tbl$(406, 2))
    'J$ = J$ + CmdServo1$("AHoffE=" & Param_tbl$(506, 2))
    'J$ = J$ + CmdServo1$("AHoffF=" & Param_tbl$(606, 2))
    'J$ = J$ + CmdServo1$("AHoffG=" & Param_tbl$(706, 2))
    'J$ = J$ + CmdServo1$("AHoffH=" & Param_tbl$(806, 2))
    'J$ = J$ + CmdServo2$("AHoffI=" & Param_tbl$(1106, 2))
    'J$ = J$ + CmdServo2$("AHoffJ=" & Param_tbl$(1206, 2))
    'J$ = J$ + CmdServo2$("AHoffK=" & Param_tbl$(1306, 2))
    'J$ = J$ + CmdServo2$("AHoffL=" & Param_tbl$(1406, 2))
    'J$ = J$ + CmdServo2$("AHoffM=" & Param_tbl$(1506, 2))
    'J$ = J$ + CmdServo2$("AHoffN=" & Param_tbl$(1606, 2))
    'J$ = J$ + CmdServo2$("AHoffO=" & Param_tbl$(1706, 2))
    'J$ = J$ + CmdServo2$("AHoffP=" & Param_tbl$(1806, 2))

    'J$ = J$ + CmdServo1$("HoSpA=" & Param_tbl$(111, 2)) 'Homing speeds
    'J$ = J$ + CmdServo1$("HoSpB=" & Param_tbl$(211, 2))
    'J$ = J$ + CmdServo1$("HoSpC=" & Param_tbl$(311, 2))
    'J$ = J$ + CmdServo1$("HoSpD=" & Param_tbl$(411, 2))
    'J$ = J$ + CmdServo1$("HoSpE=" & Param_tbl$(511, 2))
    'J$ = J$ + CmdServo1$("HoSpF=" & Param_tbl$(611, 2))
    'J$ = J$ + CmdServo1$("HoSpG=" & Param_tbl$(711, 2))
    'J$ = J$ + CmdServo1$("HoSpH=" & Param_tbl$(811, 2))
    'J$ = J$ + CmdServo2$("HoSpI=" & Param_tbl$(1111, 2))
    'J$ = J$ + CmdServo2$("HoSpJ=" & Param_tbl$(1211, 2))
    'J$ = J$ + CmdServo2$("HoSpK=" & Param_tbl$(1311, 2))
    'J$ = J$ + CmdServo2$("HoSpL=" & Param_tbl$(1411, 2))
    'J$ = J$ + CmdServo2$("HoSpM=" & Param_tbl$(1511, 2))
    'J$ = J$ + CmdServo2$("HoSpN=" & Param_tbl$(1611, 2))
    'J$ = J$ + CmdServo2$("HoSpO=" & Param_tbl$(1711, 2))
    'J$ = J$ + CmdServo2$("HoSpP=" & Param_tbl$(1811, 2))

    'J$ = J$ + CmdServo1$("HoSpzA=" & Param_tbl$(112, 2)) 'Z Ref speeds
    'J$ = J$ + CmdServo1$("HoSpzB=" & Param_tbl$(212, 2))
    'J$ = J$ + CmdServo1$("HoSpzC=" & Param_tbl$(312, 2))
    'J$ = J$ + CmdServo1$("HoSpzD=" & Param_tbl$(412, 2))
    'J$ = J$ + CmdServo1$("HoSpzE=" & Param_tbl$(512, 2))
    'J$ = J$ + CmdServo1$("HoSpzF=" & Param_tbl$(612, 2))
    'J$ = J$ + CmdServo1$("HoSpzG=" & Param_tbl$(712, 2))
    'J$ = J$ + CmdServo1$("HoSpzH=" & Param_tbl$(812, 2))
    'J$ = J$ + CmdServo2$("HoSpzI=" & Param_tbl$(1112, 2))
    'J$ = J$ + CmdServo2$("HoSpzJ=" & Param_tbl$(1212, 2))
    'J$ = J$ + CmdServo2$("HoSpzK=" & Param_tbl$(1312, 2))
    'J$ = J$ + CmdServo2$("HoSpzL=" & Param_tbl$(1412, 2))
    'J$ = J$ + CmdServo2$("HoSpzM=" & Param_tbl$(1512, 2))
    'J$ = J$ + CmdServo2$("HoSpzN=" & Param_tbl$(1612, 2))
    'J$ = J$ + CmdServo2$("HoSpzO=" & Param_tbl$(1712, 2))
    'J$ = J$ + CmdServo2$("HoSpzP=" & Param_tbl$(1812, 2))

    J$ = J$ + CmdServo1$("CtWghtA=" & Str$(MasCPI!(0))) 'Counts per inch
    J$ = J$ + CmdServo1$("CtWghtB=" & Str$(MasCPI!(1)))
```

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```
    J% = J% + CmdServo1%("CtWghtC=" & Str$(MasCPI!(2)))
    J% = J% + CmdServo1%("CtWghtD=" & Str$(MasCPI!(3)))
    J% = J% + CmdServo1%("CtWghtE=" & Str$(MasCPI!(4)))
    J% = J% + CmdServo1%("CtWghtF=" & Str$(MasCPI!(5)))
    J% = J% + CmdServo1%("CtWghtG=" & Str$(MasCPI!(6)))
    J% = J% + CmdServo1%("CtWghtH=" & Str$(MasCPI!(7)))
    J% = J% + CmdServo2%("CtWghtI=" & Str$(MasCPI!(8)))
    J% = J% + CmdServo2%("CtWghtJ=" & Str$(MasCPI!(9)))
    J% = J% + CmdServo2%("CtWghtK=" & Str$(MasCPI!(10)))
    J% = J% + CmdServo2%("CtWghtL=" & Str$(MasCPI!(11)))
    'J% = J% + CmdServo2%("CtWghtM=" & Str$(MasCPI!(12)))
    'J% = J% + CmdServo2%("CtWghtN=" & Str$(MasCPI!(13)))
    'J% = J% + CmdServo2%("CtWghtO=" & Str$(MasCPI!(14)))
    'J% = J% + CmdServo2%("CtWghtP=" & Str$(MasCPI!(15)))

    J% = J% + CmdServo1%("JogSpeed=" & Param_tbl$(904, 2))
    J% = J% + CmdServo2%("JogSpeed=" & Param_tbl$(904, 2))
    J% = J% + CmdServo1%("ProdHoS=" & Param_tbl$(908, 2))
    J% = J% + CmdServo2%("ProdHoS=" & Param_tbl$(908, 2))
    J% = J% + CmdServo1%("WautoonS=" & Param_tbl$(911, 2))
    J% = J% + CmdServo1%("WipVBmax=" & Param_tbl$(922, 2))
    J% = J% + CmdServo1%("WipeJogS=" & Param_tbl$(925, 2))
    J% = J% + CmdServo1%("IPwipcal=" & Param_tbl$(927, 2))
    J% = J% + CmdServo1%("WipeHoS=" & Param_tbl$(929, 2))
    J% = J% + CmdServo1%("IPwipaut=" & Param_tbl$(930, 2))
    J% = J% + CmdServo1%("WVBegain=" & Param_tbl$(931, 2))
    J% = J% + CmdServo1%("WVBcalof=" & Param_tbl$(932, 2))
    J% = J% + CmdServo1%("VB3nullP=" & Param_tbl$(933, 2))
    J% = J% + CmdServo1%("VB4nullP=" & Param_tbl$(934, 2))
    J% = J% + CmdServo1%("VB1nullP=" & Param_tbl$(935, 2))
    J% = J% + CmdServo1%("VB2nullP=" & Param_tbl$(936, 2))
    J% = J% + CmdServo1%("IntMEmax=" & Param_tbl$(937, 2))
    J% = J% + CmdServo1%("IntMEgn=" & Param_tbl$(938, 2))
    J% = J% + CmdServo1%("IntVBmax=" & Param_tbl$(939, 2))
    J% = J% + CmdServo1%("IntVBgn=" & Param_tbl$(940, 2))
    J% = J% + CmdServo1%("DieMEmax=" & Param_tbl$(941, 2))
    J% = J% + CmdServo1%("DieMEgn=" & Param_tbl$(942, 2))
    J% = J% + CmdServo1%("DieVBmax=" & Param_tbl$(943, 2))
    J% = J% + CmdServo1%("DieVBgn=" & Param_tbl$(944, 2))
    J% = J% + CmdServo1%("DieSave=" & Param_tbl$(945, 2))
    J% = J% + CmdServo1%("DieSintv=" & Param_tbl$(946, 2))
    J% = J% + CmdServo1%("arVBmax=" & Param_tbl$(947, 2))
    J% = J% + CmdServo1%("arVBgn=" & Param_tbl$(948, 2))
    J% = J% + CmdServo1%("VB1nullA=" & Param_tbl$(949, 2))
    J% = J% + CmdServo2%("Maxerr=" & Param_tbl$(950, 2))
    J% = J% + CmdServo1%("IntLwin=" & Param_tbl$(951, 2))
    frmConfig!MhRealInput3.Text = Param_tbl$(951, 2)
    J% = J% + CmdServo1%("IntUwin=" & Param_tbl$(952, 2))
    frmConfig!MhRealInput10.Text = Param_tbl$(952, 2)
    J% = J% + CmdServo1%("DieLwin=" & Param_tbl$(953, 2))
    frmConfig!MhRealInput4.Text = Param_tbl$(953, 2)
    J% = J% + CmdServo1%("DieUwin=" & Param_tbl$(954, 2))
    frmConfig!MhRealInput12.Text = Param_tbl$(954, 2)
    J% = J% + CmdServo2%("CutLwin=" & Param_tbl$(955, 2))
    frmConfig!MhRealInput5.Text = Param_tbl$(955, 2)
    J% = J% + CmdServo2%("CutUwin=" & Param_tbl$(956, 2))
    frmConfig!MhRealInput1.Text = Param_tbl$(956, 2)
    J% = J% + CmdServo2%("CutMEmax=" & Param_tbl$(957, 2))
    J% = J% + CmdServo2%("CutMEgn=" & Param_tbl$(958, 2))
    J% = J% + CmdServo2%("AxisX[7]=" & Param_tbl$(959, 2))
    J% = J% + CmdServo2%("AxisY[7]=" & Param_tbl$(960, 2))
    J% = J% + CmdServo2%("AxisZ[7]=" & Param_tbl$(961, 2))

    JogSpeed% = Param_tbl$(904, 2) 'Map for global use

    If J% <> 0 Then 'Error loading variables
```

```
Module4 - 10

        MsgBox ("?Error loading App variables")
        Else
    End If

End Sub

Public Function ReqServo$(Command$, Processor%)

    'New function as of 12-Jul-97 to read data from the motion card.
    'Legal commands are passed through Command$ with the response
    'returned to the calling function. Errors return null string

    Dim I%

    ReqServo$ = ""
    Select Case Processor%

    Case 0 ' First processor
    I% = CmdServo1%(Command$) 'Request the data
    I% = InStr(1, frmMain!DMCShell1.DMCResponse, Chr$(10))
    If I% = 0 Then I% = 1 'Return null if LF not found
    ReqServo$ = Mid$(frmMain!DMCShell1.DMCResponse, 1, I% - 1)

    Case 1 ' Second processor
    I% = CmdServo2%(Command$) 'Request the data
    I% = InStr(1, frmMain!DMCShell2.DMCResponse, Chr$(10))
    If I% = 0 Then I% = 1 'Return null if LF not found
    ReqServo$ = Mid$(frmMain!DMCShell2.DMCResponse, 1, I% - 1)

    End Select

End Function
```

```
Module3 - 1

    'Program        : General
    'Creation date  : 21-Oct-94
    'Module         : PIODRV.BAS
    'Version        : V2.0
    'Edit           : -00
    'Edit date      : 12-Feb-97
    'Author         : Joseph B. Schutte III
    '                 Industrial Light & Motion, Inc.
    '                 2170 Van Blaricum Rd.
    '                 Cincinnati OH 45233  USA
    '
    'Copyright (C) 1995-2000 Industrial Light & Motion, Inc.
    '
    'Revision History
    '
    'Ver/Edit   Edit date   Who     Reason
    'V2.0-01    10-Oct-00   JBSIII  Mod addresses for PCI card
    'V2.0-00    12-Feb-97   JBSIII  Major upgrade 32 bit / Win95 & NT
    'V1.5-00    19-Jun-95   JBSIII  Add ScanInputs and ScanOutputs subroutine
    '
    '
    'This module handles the I/O mapping through the PIO
    'card. Four primary operations are supported:
    '
    'PioInit -  Sub that initializes the PIO board and
    '           working variables.
    'PioIn%(x) - Function that returns the condition of an
    '           input defined by x.
    'PioOut(x,y)-Sub that sets the Input defined by X to
    '           the value y (0 or 1).
    '
    'ScanPLCInputs - Sub reads all inputs and stores in array PLC_Imap%()
    '
    'StrobePLCOutputs - Sub writes contents of PLC_Omap%() to the
    '           discrete outputs.

    Global OutImage%(10) 'Image of Output registers here
    Global PLC_I%(128)  'PLC discrete input registers
    Global PLC_I_Last%(128) 'Track the values on the last scan
    Global PLC_O%(128) 'PLC discrete output registers

    Const IobaseAddr% = &HEF80 'This is the hardware base address

    Declare Function MhInpByte Lib "MhMu32.DLL" _
                               (ByVal Port As Long) As Byte

    Declare Function MhInpWord Lib "MhMu32.DLL" _
                               (ByVal Port As Long) As Long

    Declare Sub MhOutByte Lib "MhMu32.DLL" _
                               (ByVal Port As Long, ByVal Valu As Byte)

    Declare Sub MhOutWord Lib "MhMu32.DLL" _
                               (ByVal Port As Long, _
                                ByVal Valu As Integer)

Function PioIn%(IoChannel%)

    Select Case IoChannel%

        Case 0: PioIn% = ReadPIO%(IobaseAddr% + 0, 1) 'PLC Input #0
        Case 1: PioIn% = ReadPIO%(IobaseAddr% + 0, 2) 'PLC Input #1
        Case 2: PioIn% = ReadPIO%(IobaseAddr% + 0, 4) 'PLC Input #2
        Case 3: PioIn% = ReadPIO%(IobaseAddr% + 0, 8) 'PLC Input #3
        Case 4: PioIn% = ReadPIO%(IobaseAddr% + 0, 16) 'PLC Input #4
        Case 5: PioIn% = ReadPIO%(IobaseAddr% + 0, 32) 'PLC Input #5
        Case 6: PioIn% = ReadPIO%(IobaseAddr% + 0, 64) 'PLC Input #6
```

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```
        Case 7: PioIn% = ReadPIO%(IobaseAddr% + 0, 128) 'PLC Input #7

        Case 8: PioIn% = ReadPIO%(IobaseAddr% + 1, 1) 'PLC Input #8
        Case 9: PioIn% = ReadPIO%(IobaseAddr% + 1, 2) 'PLC Input #9
        Case 10: PioIn% = ReadPIO%(IobaseAddr% + 1, 4) 'PLC Input #10
        Case 11: PioIn% = ReadPIO%(IobaseAddr% + 1, 8) 'PLC Input #11
        Case 12: PioIn% = ReadPIO%(IobaseAddr% + 1, 16) 'PLC Input #12
        Case 13: PioIn% = ReadPIO%(IobaseAddr% + 1, 32) 'PLC Input #13.
        Case 14: PioIn% = ReadPIO%(IobaseAddr% + 1, 64) 'PLC Input #14
        Case 15: PioIn% = ReadPIO%(IobaseAddr% + 1, 128) 'PLC Input #15

        Case 16: PioIn% = ReadPIO%(IobaseAddr% + 2, 1) 'PLC Input #16
        Case 17: PioIn% = ReadPIO%(IobaseAddr% + 2, 2) 'PLC Input #17
        Case 18: PioIn% = ReadPIO%(IobaseAddr% + 2, 4) 'PLC Input #18
        Case 19: PioIn% = ReadPIO%(IobaseAddr% + 2, 8) 'PLC Input #19
        Case 20: PioIn% = ReadPIO%(IobaseAddr% + 2, 16) 'PLC Input #20
        Case 21: PioIn% = ReadPIO%(IobaseAddr% + 2, 32) 'PLC Input #21
        Case 22: PioIn% = ReadPIO%(IobaseAddr% + 2, 64) 'PLC Input #22
        Case 23: PioIn% = ReadPIO%(IobaseAddr% + 2, 128) 'PLC Input #23

        Case 24: PioIn% = ReadPIO%(IobaseAddr% + 4, 1) 'PLC Input #24
        Case 25: PioIn% = ReadPIO%(IobaseAddr% + 4, 2) 'PLC Input #25
        Case 26: PioIn% = ReadPIO%(IobaseAddr% + 4, 4) 'PLC Input #26
        Case 27: PioIn% = ReadPIO%(IobaseAddr% + 4, 8) 'PLC Input #27
        Case 28: PioIn% = ReadPIO%(IobaseAddr% + 4, 16) 'PLC Input #28
        Case 29: PioIn% = ReadPIO%(IobaseAddr% + 4, 32) 'PLC Input #29
        Case 30: PioIn% = ReadPIO%(IobaseAddr% + 4, 64) 'PLC Input #30
        Case 31: PioIn% = ReadPIO%(IobaseAddr% + 4, 128) 'PLC Input #31

        Case 32: PioIn% = ReadPIO%(IobaseAddr% + 5, 1) 'PLC Input #32
        Case 33: PioIn% = ReadPIO%(IobaseAddr% + 5, 2) 'PLC Input #33
        Case 34: PioIn% = ReadPIO%(IobaseAddr% + 5, 4) 'PLC Input #34
        Case 35: PioIn% = ReadPIO%(IobaseAddr% + 5, 8) 'PLC Input #35
        Case 36: PioIn% = ReadPIO%(IobaseAddr% + 5, 16) 'PLC Input #36
        Case 37: PioIn% = ReadPIO%(IobaseAddr% + 5, 32) 'PLC Input #37
        Case 38: PioIn% = ReadPIO%(IobaseAddr% + 5, 64) 'PLC Input #38
        Case 39: PioIn% = ReadPIO%(IobaseAddr% + 5, 128) 'PLC Input #39

        Case 40: PioIn% = ReadPIO%(IobaseAddr% + 6, 1) 'PLC Input #40
        Case 41: PioIn% = ReadPIO%(IobaseAddr% + 6, 2) 'PLC Input #41
        Case 42: PioIn% = ReadPIO%(IobaseAddr% + 6, 4) 'PLC Input #42
        Case 43: PioIn% = ReadPIO%(IobaseAddr% + 6, 8) 'PLC Input #43
        Case 44: PioIn% = ReadPIO%(IobaseAddr% + 6, 16) 'PLC Input #44
        Case 45: PioIn% = ReadPIO%(IobaseAddr% + 6, 32) 'PLC Input #45
        Case 46: PioIn% = ReadPIO%(IobaseAddr% + 6, 64) 'PLC Input #46
        Case 47: PioIn% = ReadPIO%(IobaseAddr% + 6, 128) 'PLC Input #47

        Case 48: PioIn% = ReadPIO%(IobaseAddr% + 8, 1) 'PLC Input #48
        Case 49: PioIn% = ReadPIO%(IobaseAddr% + 8, 2) 'PLC Input #49
        Case 50: PioIn% = ReadPIO%(IobaseAddr% + 8, 4) 'PLC Input #50
        Case 51: PioIn% = ReadPIO%(IobaseAddr% + 8, 8) 'PLC Input #51
        Case 52: PioIn% = ReadPIO%(IobaseAddr% + 8, 16) 'PLC Input #52
        Case 53: PioIn% = ReadPIO%(IobaseAddr% + 8, 32) 'PLC Input #53
        Case 54: PioIn% = ReadPIO%(IobaseAddr% + 8, 64) 'PLC Input #54
        Case 55: PioIn% = ReadPIO%(IobaseAddr% + 8, 128) 'PLC Input #55

        Case 56: PioIn% = ReadPIO%(IobaseAddr% + 9, 1) 'PLC Input #56
        Case 57: PioIn% = ReadPIO%(IobaseAddr% + 9, 2) 'PLC Input #57
        Case 58: PioIn% = ReadPIO%(IobaseAddr% + 9, 4) 'PLC Input #58
        Case 59: PioIn% = ReadPIO%(IobaseAddr% + 9, 8) 'PLC Input #59
        Case 60: PioIn% = ReadPIO%(IobaseAddr% + 9, 16) 'PLC Input #60
        Case 61: PioIn% = ReadPIO%(IobaseAddr% + 9, 32) 'PLC Input #61
        Case 62: PioIn% = ReadPIO%(IobaseAddr% + 9, 64) 'PLC Input #62
        Case 63: PioIn% = ReadPIO%(IobaseAddr% + 9, 128) 'PLC Input #63

        Case 64: PioIn% = ReadPIO%(IobaseAddr% + 10, 1) 'PLC Input #64
        Case 65: PioIn% = ReadPIO%(IobaseAddr% + 10, 2) 'PLC Input #65
```

```
Module3 - 3

        Case 66: PioIn% = ReadPIO%(IobaseAddr% + 10, 4) 'PLC Input #66
        Case 67: PioIn% = ReadPIO%(IobaseAddr% + 10, 8) 'PLC Input #67
        Case 68: PioIn% = ReadPIO%(IobaseAddr% + 10, 16) 'PLC Input #68
        Case 69: PioIn% = ReadPIO%(IobaseAddr% + 10, 32) 'PLC Input #69
        Case 70: PioIn% = ReadPIO%(IobaseAddr% + 10, 64) 'PLC Input #70
        Case 71: PioIn% = ReadPIO%(IobaseAddr% + 10, 128) 'PLC Input #71

    End Select

End Function

Sub PioInit()

    Dim I%

    Call MhOutByte(IobaseAddr% + 3, &H9B) 'Set 1st 24 lines as inputs
    Call MhOutByte(IobaseAddr% + 7, &H9B) 'Set 2nd 24 lines as inputs
    Call MhOutByte(IobaseAddr% + 11, &H9B) 'Set 3rd 24 lines as inputs
    Call MhOutByte(IobaseAddr% + 15, &H80) 'Set next 24 lines as outputs
    Call MhOutByte(IobaseAddr% + 19, &H80) 'Set last 24 lines as outputs

    For I% = 0 To 7
        OutImage%(I%) = 0 'Clear the image array
    Next I%

    Call MhOutByte(IobaseAddr% + 12, 255) 'Bit 0 - 7
    Call MhOutByte(IobaseAddr% + 13, 255) 'Bit 8 - 15
    Call MhOutByte(IobaseAddr% + 14, 255) 'Bit 16 - 23
    Call MhOutByte(IobaseAddr% + 16, 255) 'Bit 24 - 31
    Call MhOutByte(IobaseAddr% + 17, 255) 'Bit 32 - 39
    Call MhOutByte(IobaseAddr% + 18, 255) 'Bit 40 - 47
    'Set all hardware port bits initially to 0

End Sub

Sub PioOut(IoChannel%, NuVal%)

    Select Case IoChannel%

        Case 0: Call WritePIO(IobaseAddr% + 12, 0, 1, NuVal%) 'PLC Output #0
        Case 1: Call WritePIO(IobaseAddr% + 12, 0, 2, NuVal%) 'PLC Output #1
        Case 2: Call WritePIO(IobaseAddr% + 12, 0, 4, NuVal%) 'PLC Output #2
        Case 3: Call WritePIO(IobaseAddr% + 12, 0, 8, NuVal%) 'PLC Output #3
        Case 4: Call WritePIO(IobaseAddr% + 12, 0, 16, NuVal%) 'PLC Output #4
        Case 5: Call WritePIO(IobaseAddr% + 12, 0, 32, NuVal%) 'PLC Output #5
        Case 6: Call WritePIO(IobaseAddr% + 12, 0, 64, NuVal%) 'PLC Output #6
        Case 7: Call WritePIO(IobaseAddr% + 12, 0, 128, NuVal%) 'PLC Output #7

        Case 8: Call WritePIO(IobaseAddr% + 13, 1, 1, NuVal%) 'PLC Output #8
        Case 9: Call WritePIO(IobaseAddr% + 13, 1, 2, NuVal%) 'PLC Output #9
        Case 10: Call WritePIO(IobaseAddr% + 13, 1, 4, NuVal%) 'PLC Output #10
        Case 11: Call WritePIO(IobaseAddr% + 13, 1, 8, NuVal%) 'PLC Output #11
        Case 12: Call WritePIO(IobaseAddr% + 13, 1, 16, NuVal%) 'PLC Output #12
        Case 13: Call WritePIO(IobaseAddr% + 13, 1, 32, NuVal%) 'PLC Output #13
        Case 14: Call WritePIO(IobaseAddr% + 13, 1, 64, NuVal%) 'PLC Output #14
        Case 15: Call WritePIO(IobaseAddr% + 13, 1, 128, NuVal%) 'PLC Output #15

        Case 16: Call WritePIO(IobaseAddr% + 14, 2, 1, NuVal%) 'PLC Output #16
        Case 17: Call WritePIO(IobaseAddr% + 14, 2, 2, NuVal%) 'PLC Output #17
        Case 18: Call WritePIO(IobaseAddr% + 14, 2, 4, NuVal%) 'PLC Output #18
        Case 19: Call WritePIO(IobaseAddr% + 14, 2, 8, NuVal%) 'PLC Output #19
        Case 20: Call WritePIO(IobaseAddr% + 14, 2, 16, NuVal%) 'PLC Output #20
        Case 21: Call WritePIO(IobaseAddr% + 14, 2, 32, NuVal%) 'PLC Output #21
        Case 22: Call WritePIO(IobaseAddr% + 14, 2, 64, NuVal%) 'PLC Output #22
        Case 23: Call WritePIO(IobaseAddr% + 14, 2, 128, NuVal%) 'PLC Output #23

        Case 24: Call WritePIO(IobaseAddr% + 16, 3, 1, NuVal%) 'PLC Output #24
```

Module3 - 4

```
        Case 25: Call WritePIO(IobaseAddr% + 16, 3, 2, NuVal%) 'PLC Output #25
        Case 26: Call WritePIO(IobaseAddr% + 16, 3, 4, NuVal%) 'PLC Output #26
        Case 27: Call WritePIO(IobaseAddr% + 16, 3, 8, NuVal%) 'PLC Output #27
        Case 28: Call WritePIO(IobaseAddr% + 16, 3, 16, NuVal%) 'PLC Output #28
        Case 29: Call WritePIO(IobaseAddr% + 16, 3, 32, NuVal%) 'PLC Output #29
        Case 30: Call WritePIO(IobaseAddr% + 16, 3, 64, NuVal%) 'PLC Output #30
        Case 31: Call WritePIO(IobaseAddr% + 16, 3, 128, NuVal%) 'PLC Output #31

        Case 32: Call WritePIO(IobaseAddr% + 17, 4, 1, NuVal%) 'PLC Output #32
        Case 33: Call WritePIO(IobaseAddr% + 17, 4, 2, NuVal%) 'PLC Output #33
        Case 34: Call WritePIO(IobaseAddr% + 17, 4, 4, NuVal%) 'PLC Output #34
        Case 35: Call WritePIO(IobaseAddr% + 17, 4, 8, NuVal%) 'PLC Output #35
        Case 36: Call WritePIO(IobaseAddr% + 17, 4, 16, NuVal%) 'PLC Output #36
        Case 37: Call WritePIO(IobaseAddr% + 17, 4, 32, NuVal%) 'PLC Output #37
        Case 38: Call WritePIO(IobaseAddr% + 17, 4, 64, NuVal%) 'PLC Output #38
        Case 39: Call WritePIO(IobaseAddr% + 17, 4, 128, NuVal%) 'PLC Output #39

        Case 40: Call WritePIO(IobaseAddr% + 18, 5, 1, NuVal%) 'PLC Output #40
        Case 41: Call WritePIO(IobaseAddr% + 18, 5, 2, NuVal%) 'PLC Output #41
        Case 42: Call WritePIO(IobaseAddr% + 18, 5, 4, NuVal%) 'PLC Output #42
        Case 43: Call WritePIO(IobaseAddr% + 18, 5, 8, NuVal%) 'PLC Output #43
        Case 44: Call WritePIO(IobaseAddr% + 18, 5, 16, NuVal%) 'PLC Output #44
        Case 45: Call WritePIO(IobaseAddr% + 18, 5, 32, NuVal%) 'PLC Output #45
        Case 46: Call WritePIO(IobaseAddr% + 18, 5, 64, NuVal%) 'PLC Output #46
        Case 47: Call WritePIO(IobaseAddr% + 18, 5, 128, NuVal%) 'PLC Output #47


    End Select

End Sub

Function ReadPIO%(Addr%, Pos%)

    Dim I%

    I% = MhInpByte(Addr%) 'Read the Hardware input
    If (I% And Pos%) <> 0 Then 'Evaluate the bit
        ReadPIO% = False 'Return true if set
        Else
        ReadPIO% = True 'False if clear
    End If

End Function

Sub WritePIO(Addr%, ArrayPos%, BitPos%, NuVal%)

    Dim I%

    If NuVal% = 0 Then
        I% = OutImage%(ArrayPos%) And (Not BitPos%) 'Clear the bit if 0
        Else
        I% = OutImage%(ArrayPos%) Or BitPos% 'Set the bit if 1
    End If

    OutImage%(ArrayPos%) = I% 'Update the image register
    Call MhOutByte(Addr%, (Not (I%) And 255)) 'Update the hardware register

End Sub


Public Sub ScanPLCInputs()

    Dim I%

    'Routine reads all input channels and maps to PLC_Imap%. Subscript
    'points to the channel number.
```

```
Module3 - 5

    For I% = 0 To 71
        PLC_I_Last%(I%) = PLC_I%(I%)
        PLC_I%(I%) = PioIn%(I%)      'Read the bit
    Next I%

End Sub

Public Sub StrobePLCOutputs()

    Dim I%

    'Routine writes contents of PLC_Omap% to appropriate discrete output

    For I% = 0 To 47

        Call PioOut(I%, PLC_O%(I%))     'Write the array to discrete outputs

    Next I%

End Sub
```

Module2 - 1

```
'Program         : Press_00.exe
'Module          : MASTEXEC.BAS
'Creation date   : 29-Sep-93
'Version         : V2.1
'Edit            : -01
'Edit date       : 26-Aug-00
'Author          : Joseph B. Schutte III
'                  Industrial Light & Motion, Inc.
'                  2170 Van Blaricum Rd.
'                  Cincinnati OH 45233 USA
'
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'
'
'Revision History
'
'Version/Edit   Edit date   Who      Reason
'V2.1-01        26-Aug-00   JBSIII   Add special functions for Press_00
'V2.1-00        20-Jul-97   JBSIII   Add functions to support Web Perforator
'V2.0-00        20-Feb-97   JBSIII   Major upgrade to package to support VB4 and
'                                    32 bit code
'V1.0-06        25-Jan-97   JBSIII   Change homing seq to utilize HM command
'                                    rather that FE/FI.
'V1.0-05        07-Jan-97   JBSIII   Fix continuous mode bug and improve
'                                    perf cycle execution
'V1.0-04        21-Dec-96   JBSIII   Add move to unload pos to ref search
'V1.0-03        06-Oct-96   JBSIII   Add programmable ref search P112
'V1.0-01        27-Aug-94   JBSIII   Add I/O diag variables
'V1.0-02        28-Aug-94   JBSIII   Create Init_System to
'                                    get access for powerdown
'
Option Explicit

Global MasCmdPos!(16) 'Master desired position (0)=A
Global MasActPos!(16) 'Actual position based on current reference
Global MasToGoPos!(16) 'Remainder of distance to travel
Global MasFeedRate!(16) 'This is the feedrate in IPM
Global MasRefMode%(16) ' Reference mode 0=ABS 1=Left 2=Right
Global LMasCmdPos!(16) 'Use these as edge detectors for UpdateAxDisplay
Global LMasActPos!(16)
Global LMasToGoPos!(16)
Global LMasFeedRate!(16)
Global LMasRefMode%(16)

Global MasCPI!(16) 'This is the counts per inch for data conversion
Global MasCPR!(16) 'Counts per rev

Global ABSposoffset!(16) 'This is the offset distance to ABS
Global CFlerrorcnt% 'Running trend counter for CF1 errors (AutoIntegrator)
Global CF1MMiss& 'This is the number of contiguous missed sheeter marks
Global Configtrace% 'Used for returns from Npad and Apad
Global Counter_NRS& 'Master non-resetable counter
Global Counter_shift1& 'Resetable counter #1
Global Counter_shift2& 'Resetable counter #2
Global Cutoff_CPR!
Global CutoffEnable% 'Set when Cutoff unit enabled
Global DiecuttingEnable% 'Set when Diecutting Unit enabled
Global Dposerror! 'Diecutter position error
Global EnableHostPolling1% 'Set to zero to disable counter/data updates
Global EnableHostPolling2% 'Same, CPU #2
Global FlexoCalibrated% 'Flexo calibrated
Global Flexo_CPR! 'Modulus value for ABS postion
Global IntaglioCalReq% 'This is the request flag from CPU-0
Global Intaglio_CPR! 'Modulus calc for ABS positions
Global Intaglio_Mod_factor% 'Number of Intaglio revs in a repeat
Global IntChillRollEnable% 'Chill roll enable
```

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```
Global IntInfeedEnable% 'Product infeed enable
Global IntOutfeedEnable% 'Product outfeed enable
Global IntShuttleEnable% 'Shuttle roll enable
Global IntWipingEnable% 'Wiping servo enable
Global Iposerror! 'Intaglio position error
Global IP_Move% 'Commanded change this cycle
Global IP_offset# 'This is the IP (Intaglio) CAM offset
Global HistogramStrobe% 'Set once per CF1 rev to sync Histograms
Global HistogramApos% 'Perf histogram pointer
Global HistogramBpos% 'Sheeter histogram pointer
Global HistoLastTick# 'Histogram's last count pos
Global IntaglioCalibrated% 'Intaglio calibration status
Global LastAxis% 'Parameter load sets last active axis
Global LastCF1% '+1=CF1 err trend is +, -1=CF1 err trend is -
Global LastCodeLine2% 'This is the last line in the program
Dim LastCF1tick%
Global LastMotionCntr& 'Previous scan counter value from Galil
Global Lube_counter& 'Number of impressions since last lube cycle
Global MachineCalibrated% 'Global calibrate signal set by PLC
Global MotionCntr& 'Counter value read from Motion subsystem
Global MotionSystemStatus% 'Motion system status read from card
Global Numbering_CPR!
Global NumberingEnable% 'Set when Numbering unit enabled
Global ProductCalibrated% 'VB Loop ready on product system
Global P00Flexotrace%
Global P00Intagliotrace%
Dim Parsed_Str2$(50)
Dim Parsed_Count% 'Command Parser data entry counter
Dim Parsed_Count2%
Dim Parsed_Str$(50) 'Command Parser target array
Global Pressruntrace% 'Used for returns from keypad to frmPressrun
Global PWRewindDia 'Intalio paperwipe roll diameter sensor
Global EditActive% 'Flag used to inhibit updates when not in edit mode
Global Npad_Val! 'Result value from numeric pad touch screen
Global Apad_Text$ 'Result value from ascii pad touch screen
Global RegIntaglioAuto% 'Set when Intaglio register control in auto
Global RegDiecuttingAuto% 'Set when Diecutter in Auto
Global RegNumberingAuto% 'Set when Numbering in Auto
Global RegCutoffAuto% 'Set when Cutoff in Auto register
Global Ridethrudelay% 'Motion ride through timer flag
Global SaveOpControls% 'Image of operator PB status
Global SH1MMiss& 'Counter for missed register marks
Global PressRollData$(20) 'Holding location for press production data
Global RollDataLoaded% 'Flag that is set when valid production data loaded
Global OpPositionOffset# 'this is the operator running bias
Global SaveRollEnable% 'Enables regular updates of roll data to disk
Global ScanOpPb% 'Used for edge detection in operator controls
Global Startdelay% 'Motion start delay timer flag
Global SysMode% 'Machine mode: 1=Flexo, 2= Intaglio, 3=Combination
Global SystemTickCounter# 'Number of impressions since bootup
Global System_circumference# 'This is the current system circumference
Global TargetPos# 'Work variable used as target position for transport moves
Global Setuptrace% 'Returns from frmConfig
Global Paramstrace% 'Returns from frmPtable
Global Productiontrace% 'Returns from frmProduction
Global Testvar& 'Temp variable for testing system
Global WhoseFocus% '1=Pressrun, 2=Flexo, 3=Params, 4=Production
                   '5=Config, 6=Intaglio
Global WipingCalibrated% 'VB Loop ready on wiping system

Global LastSystemState$ 'This is the previous message in the status box

Global LastMasterState%

Global SystemStatus% 'Main System Status word
                     'Bit definitions:
                     '0 -
```

```
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                        '1 -
                        '2 -
                        '3 -
                        '4 -
                        '5 -
                        '6 -
                        '7 -
                        '8 - Power ON status 1=On
                        '9 -
                        '10 -
                        '11 -
                        '12 -
                        '13 -
                        '14 -
                        '15 -

    Global VarChangeFlag%(100)   'Flags set when operator data changes
                                 'Definition table:
                                 '0 - Intaglio Register offset
                                 '1 - Diecutting Register offset
                                 '2 - Numbering Register offset
                                 '3 - Cutoff Register offset
                                 '4 - System mode changed
                                 '5 - Intaglio register auto/manual
                                 '6 - Diecutting register auto/manual
                                 '7 - Numbering register auto/manual
                                 '8 - Cutoff register auto/manual
                                 '9 - Line speed change
                                 '10- Numbering repeat length change
                                 '11- Cutoff repeast length change
                                 '12- Flexo gearing bias
                                 '13- Product Infeed bias
                                 '14- SH1 gearing bias
                                 '15- SH2 gearing bias
                                 '16- Product outfeed bias
                                 '17- Wiping Infeed bias
                                 '18- Wiping Outfeed bias
                                 '19- Chill rolls gearing bias
                                 '20- Diecutting gearing bias
                                 '21- Numbering gearing bias
                                 '22- Folder/Cutoff gearing bias
                                 '23- Wiping speed trim ratio change
                                 '24- Product Calibration request
                                 '25- Wiping Calibration request
                                 '26- Diecutting Online status changed
                                 '27- Numbering Online status changed
                                 '28- Cutoff Inline status changed
                                 '29- System circumference changed
                                 '30- Inker #1 Auto speed change
                                 '31- Inker #1 Manual speed change
                                 '32- Inker #2 Auto speed change
                                 '33- Inker #2 Manual speed change
                                 '34- Inker #1 mode
                                 '35- Inker #2 mode
                                 '36- Intaglio Impression mode
                                 '37- Intaglio Wiping mode
                                 '38- Intaglio Prewipe mode
                                 '39- Flexo Impression mode changed
                                 '40- Wiping System mode
                                 '41- Request to recalc Cam table
                                 '42- Making a change to IP offset
                                 '43- Flexo register offset changed
                                 '44- Intaglio lower window changed
                                 '45- Intaglio upper window changed
                                 '46- Diecutter lower window changed
                                 '47- Diecutter upper window changed
                                 '48- Cutoff lower window changed
```

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```
                                '49- Cutoff upper window changed
                                '50- Forces a clear on the product calibrate flag


    Global IoInput_tbl$(10, 8) 'I/O diagnostic input table
    Global IoOutput_tbl$(10, 8) 'I/O diagnostic output table
    Global IoInput_tblu$(10, 8) 'I/O diagnostic input updates
    Global IoOutput_tblu$(10, 8) 'I/O diagnostic output updates

Public Sub Update_production_screen()

    FrmProduction.MhRealInput9.Text = Str$(SystemTickCounter#) 'Counter_NRS&)
    FrmProduction.MhRealInput11.Text = Str$(Counter_shift1&)
    FrmProduction.Text5.Text = Str$(ActualLinSpeed%)

End Sub

Function CmdParser%(SrcStr$, Dlm$)

    Dim I%, J%, K%

    K% = 0
    I% = 0
    J% = InStr(2, SrcStr$, Dlm$)

    While J% > 0
        Parsed_Str$(K%) = Mid$(SrcStr$, I% + 1, J% - I% - 1)
        I% = J%
        J% = InStr(I% + 1, SrcStr$, Dlm$)
        K% = K% + 1
    Wend

    Parsed_Str$(K%) = Mid$(SrcStr$, I% + 1, 40)     'Get the last entry
    K% = K% + 1

    Parsed_Str$(K%) = "" 'This is the END flag

    Parsed_Count% = K%
    CmdParser% = K%

End Function

Sub Init_System()

    Dim I%, J$
    Call LoadParameters 'Load the parameters from disk
    Call LoadProductiondata 'Load the production counters
    Call PioInit 'Initialize the Parallel I/O
    Call AioInit 'Initialize the Analog output board
    IntaglioCalReq% = 0
    IP_offset# = 0
    frmConfig!MhRealInput6.Text = 0
    LastCF1tick% = 0 'Used for generating once per rev tick
    SystemStatus% = 0 'Initialize all state bits to 0
    GuardsBypassed% = 0
    Pressruntrace% = 0
    P00Flexotrace% = 0
    P00Intagliotrace% = 0
    Setuptrace% = 0
    Paramstrace% = 0
    Lube_counter& = 0
    CF1errorcnt% = 0
    LastCF1% = 0
    LinSpeedIntegrator! = 0
    HistoLastTick# = 0
    DiecuttingEnable% = 1
```

```
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    NumberingEnable% = 1
    Ridethrudelay% = 0
    Startdelay% = 0

    frmConfig!MhRealInput7.Text = 23# 'Temporary value for init
    frmConfig!MhRealInput8.Text = 1# 'Temp value
    System_circumference# = frmConfig!MhRealInput7.Text
    'Initialize Job data variables here

    I% = InitServo%() 'Init Servo board(s)
    If I% <> 0 Then 'Fatal initialization error if <> 0
        Call PioOut(0, 0)
        MsgBox ("?System initialization failed")
    End If

    I% = NewJobData% 'Load job parameters
'    If Len(FrmProduction!Text8.Text) > 3 Then
'        Call LoadRollData
'    End If
    frmConfig!MhRealInput7.Text = "23.0"
    frmConfig!MhRealInput8.Text = Param_tbl$(1332, 2)
    frmConfig!MhRealInput9.Text = Param_tbl$(1432, 2)
    'Get initial values from Param table

    For I% = 0 To 50
        VarChangeFlag%(I%) = 1
    Next I%
    Call UpdateMotionSystemVars
    'Set all flags true and call updater

    LastMasterState% = 0 'Clear last state data
    EditActive% = False 'Not initially in Edit mode

    I% = CmdServo1%("ParamOK=1") 'Must be last!!! - Enables motion prog
    I% = CmdServo2%("ParamOK=1")

    frmMain!Timer2.Enabled = True 'Enable System logic processor
    frmMain!Timer3.Enabled = True 'Enable screen updates
    frmMain!Timer4.Enabled = True 'Enable long term disk data updates
    frmMain!Timer5.Enabled = True 'Activate the PLC processor
    EnableHostPolling1% = True 'Enable Motion variable reads
    EnableHostPolling2% = True

End Sub

Sub Calculate_Flexo_modulus()

    Dim A, I%, J, K

    'This routine calculates Master Modulus
    A = 0.5
    J = frmConfig!MhRealInput7.Text 'Intaglio repeat
    K = Param_tbl$(1132, 2) 'Get the Flexo/Diecutting repeat

    I% = 0
    While Int(A) <> A 'Loop till A is an integer
        I% = I% + 1 'This is the intaglio modulus
        A = (J / K) * I% 'Flexo modulus
    Wend

    Intaglio_Mod_factor% = I%
    Intaglio_CPR! = Param_tbl$(802, 2) * I%
    Flexo_CPR! = Param_tbl$(1102, 2) * A

End Sub
```

```
Module2 - 6

Function LoadJobdata%()

    ' This module loads the data from the CNC files

    Dim I$, J%, K%, L%

    On Error GoTo Loadfail

    I$ = Param_tbl$(0, 2) & Trim$(frmMain!Text6.Text) & ".JOB"
    Open I$ For Input As 1

    Input #1, I$ 'Read the creation date
    frmP00Flexo!Text1.Text = I$


'ADD CODE HERE TO LOAD INIT



    LoadJobdata% = 0 'Successful load
    SystemStatus% = SystemStatus% Or &H20 'Set FILE LOADED bit
    Close #1

    'Force update on vars to motion system

LoadJobdata_1:
    Exit Function

Loadfail:
    MsgBox ("?Error " & Err & " reading Job file")
    LoadJobdata% = -1
    Close #1
    Resume LoadJobdata_1

End Function

Sub LoadParameters()

    On Error GoTo LoadTrap

    Dim I%, J%, K%, L$

    Open "c:\Press00\params.sys" For Input As 1

    For I% = 1 To 2000 'Setup the loop for the load
        frmPtable.MSFlexGrid1.Row = I% - 1
        frmPtable.MSFlexGrid1.Col = 0
        frmPtable.MSFlexGrid1.Text = Str$(I%)
        Line Input #1, L$ 'Get a Line from file
        J% = InStr(1, L$, ";")
        K% = InStr(J% + 1, L$, ";")
        frmPtable.MSFlexGrid1.Col = 1
        frmPtable.MSFlexGrid1.Text = Mid$(L$, J% + 1, K% - J% - 1)
        frmPtable.MSFlexGrid1.Col = 2
        frmPtable.MSFlexGrid1.Text = Mid$(L$, K% + 1, 20)
    Next I%

    LastAxis% = CInt(Param_tbl$(10, 2)) - 1

LExit:
    Close 1 'Close the parameter file
    Exit Sub

LoadTrap:
```

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```
    Resume LExit

End Sub

Sub LoadProductiondata()

    'This procedure reads the disk based storage to load counters
    'on powerup

    Dim I$

    Open "C:\Press00\Press_00.SYS" For Input As 1

    Input #1, I$ 'This is the Non-reset sheet totalizer
    Counter_NRS& = CDbl(I$)
    FrmProduction!MhRealInput9.Text = I$

    Input #1, I$ 'This is the shift sheet (resetable) count
    Counter_shift1& = CDbl(I$)
    FrmProduction!MhRealInput11.Text = I$

    Input #1, I$ 'This is the operator ID
    FrmProduction!Text1.Text = I$

    Input #1, I$ 'Read the last used roll data file
    FrmProduction!Text8.Text = I$

    Close #1

End Sub

Function LoadRollData%()

    ' This module loads the data from the SN files

    Dim I$, J$, K%

    On Error GoTo Rollfail

    I$ = FrmProduction!Text8.Text & ".DAT"
    Open I$ For Input As 1

    Line Input #1, J$ 'Read the roll identifier
    FrmProduction!Text4.Text = J$

    For K% = 1 To 10 'Read the Press specific data
        Input #1, PressRollData$(K%)
    Next K%

    Line Input #1, J$ 'Read Operator A
    FrmProduction!Text6.Text = J$

    Line Input #1, J$ 'Read Operator B
    FrmProduction!Text7.Text = J$

    Line Input #1, J$ 'Read Total impressions
    FrmProduction!MhRealInput1 = J$

    Line Input #1, J$ 'Read Good impressions
    FrmProduction!MhRealInput2 = J$

    Line Input #1, J$ 'Read Printing spoils
    FrmProduction!MhRealInput3 = J$

    Line Input #1, J$ 'Read Diecutting register spoils
```

```
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    FrmProduction!MhRealInput4 = J$

    Line Input #1, J$ 'Read Numbering spoils
    FrmProduction!MhRealInput5 = J$

    Line Input #1, J$ 'Read Sheeter register spoils
    FrmProduction!MhRealInput6 = J$

    Line Input #1, J$ 'Read Operator forced spoils
    FrmProduction!MhRealInput7 = J$

    Line Input #1, J$ 'Read Total spoils
    FrmProduction!MhRealInput8 = J$

    Close 1
    LoadRollData% = 0
    RollDataLoaded% = 1 'This is a perforator RUN permissive
    SaveRollEnable% = 1 'Enable auto save function

LoadRollData_1:
    Exit Function

Rollfail:
    MsgBox ("?Error " & Err & " reading Roll data file")
    Stop
    LoadRollData% = -1
    Resume LoadRollData_1

End Function

Function ModString$(Sval$, Incval#, Dp%)

    'This procedure either increases or decreases the numeric
    'value of the source string. Result string is returned

    Dim I%, J$, K#, L%

    K# = CDbl(Sval$) + Incval# 'This is the new value
    J$ = Trim$(Str$(K#))
    L% = InStr(1, J$, ".") 'Find the DP
    ModString$ = LeftB$(J$, L% + Dp%) 'Truncate the string

End Function

Public Sub UpdateBargraphs()

    'This routine uses Intaglioerror and CF1error to set the bargraphs.
    'Data is scaled in inches for a bargraph range of +/-1.200 inches.

    Dim I!

    frmPressrun!MhRealInput7.Text = Iposerror
    frmPressrun!MhRealInput8.Text = Dposerror

    'Update the Intaglio bar graph
    If Iposerror! < 0 Then
        'It's a negative value
        frmPressrun.Mh3dGauge2.FillValue = 0
        'Clear the positive side of the bargraph
        I! = Iposerror! * -1000
        If I! >= frmPressrun.Mh3dGauge1.Max Then
            I! = frmPressrun.Mh3dGauge1.Max
        End If
        frmPressrun.Mh3dGauge1.FillValue = I!
    End If
    If Iposerror! >= 0 Then
        'It's a positive value
```

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```
        frmPressrun.Mh3dGauge1.FillValue = 0
        I! = Iposerror! * 1000
        If I! >= frmPressrun.Mh3dGauge2.Max Then
            I! = frmPressrun.Mh3dGauge2.Max
        End If
        frmPressrun.Mh3dGauge2.FillValue = I!
    End If

    'Update the Diecutting bar graph
    If Dposerror! < 0 Then
        'It's a negative value
        frmPressrun.Mh3dGauge4.FillValue = 0
        'Clear the positive side of the bargraph
        I! = Dposerror! * -1000
        If I! >= frmPressrun.Mh3dGauge3.Max Then
            I! = frmPressrun.Mh3dGauge3.Max
        End If
        frmPressrun.Mh3dGauge3.FillValue = I!
    End If
    If Dposerror! >= 0 Then
        'It's a positive value
        frmPressrun.Mh3dGauge3.FillValue = 0
        I! = Dposerror! * 1000
        If I! >= frmPressrun.Mh3dGauge4.Max Then
            I! = frmPressrun.Mh3dGauge4.Max
        End If
        frmPressrun.Mh3dGauge4.FillValue = I!
    End If

End Sub


Function NewJobData%()

    ' This module initializes job variableas as new files

    Dim I$, J%, K%, L%

    On Error GoTo Newfail

    If Len(frmMain!Text6.Text) = 0 Then
        frmMain!Text6.Text = "Noname"
    End If

    I$ = Param_tbl$(0, 2) & frmMain!Text6.Text & ".JOB"

    Open I$ For Output As 1 'Test open the temporary file
    Close #1


    NewJobData% = 0 'Successful load
    SystemStatus% = SystemStatus% Or &H20 'Set FILE LOADED bit

NewJobdata_1:
    Exit Function

Newfail:
    MsgBox ("?Error " & Err & " creating Job file")
    NewJobData% = -1
    Resume NewJobdata_1

End Function

Function SaveJobdata%()

    ' This module saves data to the Job data files
```

```
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    Dim I$, J%, K%, L%

    On Error GoTo Savefail

    I$ = Param_tbl$(0, 2) & frmMain!Text6.Text & ".JOB"
    Open I$ For Output As 1

    I$ = Date$ 'Get the current system date
    Print #1, I$
    frmP00Flexo!Text1.Text = I$


    Close #1

    SaveJobdata% = 0 'Successful load

SaveJobdata_1:
    Exit Function

Savefail:
    MsgBox ("?Error " & Err & " writing Job file")
    SaveJobdata% = -1
    Close #1
    Resume SaveJobdata_1


End Function

Function SaveRolldata%()

    ' This module saves data to the Job data files

    Dim I$, J%, K%, L%

    If SaveRollEnable% = 0 Then 'Only if something to save
        On Error GoTo SaveRollfail

        I$ = FrmProduction!Text8.Text & ".DAT"
        Open I$ For Output As 1

        Print #1, FrmProduction!Text4.Text 'Save the roll identifier

        For K% = 1 To 10 'Resave the Press specific data
            Print #1, PressRollData$(K%)
        Next K%

        Print #1, FrmProduction!Text6.Text 'Save Operator A
        Print #1, FrmProduction!Text7.Text 'Save Operator B
        Print #1, FrmProduction!MhRealInput1 'Save Total Impressions
        Print #1, FrmProduction!MhRealInput2 'Save Good impressions
        Print #1, FrmProduction!MhRealInput3 'Save Printing spoils
        Print #1, FrmProduction!MhRealInput4 'Save Diecutting register spoils
        Print #1, FrmProduction!MhRealInput5 'Save Numbering spoils
        Print #1, FrmProduction!MhRealInput6 'Save Sheeter spoils
        Print #1, FrmProduction!MhRealInput7 'Save Operator forced spoils
        Print #1, FrmProduction!MhRealInput8 'Save Total spoils

        Close #1

        SaveRolldata% = 0 'Successful save

    End If

SaveRolldata_1:
    Exit Function

SaveRollfail:
```

```
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    MsgBox ("?Error " & Err & " writing Roll data file")
    SaveRolldata% = -1
    Resume SaveRolldata_1

End Function

Function AutoExec%()

    'This is the Top Level Auto Execution Unit. It calls routines
    'to read motion system variables, makes calculations, updates
    'system variables, and writes new variable data to the motion
    'system.

    Dim I%

    Call ReadMotionData 'Read the motion system variables from card
    Call UpdateSystemVariables 'Calc speeds, errors, etc.
    Call AutoIntegrator 'Update CF1 gear ratio trim
    Call UpdateMotionSystemRL 'Update run logic commands to motion card
    Call UpdateIntaglioDrive 'Update logic and velocity commands
    Call UpdateWipingDrive 'Update Wiping logic and velocity commands
    Call UpdateMotionSystemVars 'Update motion system ratios, etc.
    Call UpdateIntaglioInkers 'Update the velocity calc's for inkers
    Call WriteMotionData 'Write new variable data to the motion controllers

End Function

Sub UpdateIntaglioInkers()

    'Update the Velocity commands for both Intaglio Inker drives

    Dim I%, J%, T_actual%

    Select Case IntaglioInker1Control% 'Inker #1

    Case 0 'Inker OFF
        Call AioOut(3, Val(Param_tbl$(916, 2))) 'Write the null offset

    Case 1 'Inker in Manual
        If IntaglioInker1Manrun% = 0 Then
        Call AioOut(3, Val(Param_tbl$(916, 2))) 'Write the null offset
        Else
        I% = Val(Param_tbl$(916, 2)) + (Val(Param_tbl$(917, 2)) * Val(frmP00Intaglio!Slider1.Val
ue))
        Call AioOut(3, I%)
        End If
    Case 2 'Inker in Auto
        T_actual% = ActualLinSpeed% * 2 * (frmP00Intaglio!Slider2.Value / 100)
        'Plug in the auto mode scaling
        I% = Param_tbl$(916, 2) + (Param_tbl$(917, 2) * T_actual%)
        J% = Param_tbl$(916, 2) + (Param_tbl$(917, 2) * Param_tbl$(918, 2))
        If Abs(J%) > Abs(I%) Then I% = J% 'Run at min speed or better
        Call AioOut(3, I%)
    End Select

    Select Case IntaglioInker2Control% 'Inker #2

    Case 0 'Inker OFF
        Call AioOut(4, Val(Param_tbl$(919, 2))) 'Write the null offset

    Case 1 'Inker in Manual
        If IntaglioInker2Manrun% = 0 Then
        Call AioOut(4, Val(Param_tbl$(919, 2))) 'Write the null offset
        Else
        I% = Val(Param_tbl$(919, 2)) + (Val(Param_tbl$(920, 2)) * Val(frmP00Intaglio!Slider4.Val
ue))
        Call AioOut(4, I%)
```

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```
        End If
    Case 2 'Inker in Auto
        T_actual% = ActualLinSpeed% * 2 * (frmP00Intaglio!Slider3.Value / 100)
        'Plug in the auto mode scaling
        I% = Param_tbl$(919, 2) + (Param_tbl$(920, 2) * T_actual%)
        J% = Param_tbl$(919, 2) + (Param_tbl$(920, 2) * Param_tbl$(921, 2))
        If Abs(J%) > Abs(I%) Then I% = J% 'Run at min speed or better
        Call AioOut(4, I%)
    End Select

End Sub
Sub WriteCounters()

    'Update the count values to disk for non-volatile

    Open "C:\Press00\Press_00.sys" For Output As #2

    Print #2, Trim$(Str$(Counter_NRS&)) 'Non-reset totalizer
    Print #2, Trim$(Str$(Counter_shift1&)) 'Shift sheet totalizer
    Print #2, FrmProduction!Text1.Text 'Operator ID
    Print #2, FrmProduction!Text8.Text 'Current Roll ID

    Close #2

End Sub


Public Function Param_tbl$(R%, C%)

'   This function translates calls from the old Grid function
'   to the new Grid function

    frmPtable.MSFlexGrid1.Row = R%
    frmPtable.MSFlexGrid1.Col = C%

    Param_tbl$ = frmPtable.MSFlexGrid1.Text

End Function

Public Sub Update_pressrun_screen()

    'This routine handles updates of all variables on the pressrun
    'display. It is the responsibility of other subs to keep the
    'variables up to date.

    If SH1MMiss& > 10 Then
        frmPressrun!Label27.Visible = True
        Else
        frmPressrun!Label27.Visible = False
    End If
    If CF1MMiss& > 10 Then
        frmPressrun!Label5.Visible = True
        Else
        frmPressrun!Label5.Visible = False
    End If
    'Update the missing mark indicators on Pressrun screen

    Call UpdateBargraphs
    frmP00Flexo!Text5.Text = ActualLinSpeed% 'Update the display

End Sub

Public Sub WriteMotionData()

    'This routine writes variable data out to the appropriate motion controllers

    Dim I%
```

Module2 - 13

```
    If (EnableHostPolling1% = True) And (EnableHostPolling2 = True) Then

        I% = CmdServo1%("WipeRefS=" & Str$(ActualWipingSpeed% * System_circumference# / 49))

    End If

End Sub
Public Sub ReadMotionData()

    'This routine reads pertentent variables from motion card and maps
    'them to the appropriate variables in the appropriate scale

    Dim I$, J$, K%, L%, M!, N!

    LastMotionCntr& = MotionCntr&
    If (EnableHostPolling1% = True) And (EnableHostPolling2 = True) Then

        I$ = ReqServo$("MG FlexCreq", 0) 'Read the Flexo Cal req status
        K% = CmdServo2%("FlexCreq=" & Trim$(I$)) 'Map to CPU-2

        I$ = ReqServo$("MG DieCreq", 0) 'Read the Diecutting Cal req status
        K% = CmdServo2%("DieCreq=" & Trim$(I$)) 'Map to CPU-2

        I$ = ReqServo$("MG IntCreq", 0) 'Read the Intaglio Cal req status
        IntaglioCalReq% = Val(I$)

        I$ = ReqServo$("MG ALspeed", 1) 'Get the Actual Line speed
        ActualLinSpeed% = Val(I$)
        K% = CmdServo1%("ALspeed=" & I$)

        I$ = ReqServo$("MG MSIJreq", 0) 'Get the Intaglio jog request flag
        MSIntaglioJogReq% = Val(I$)

        I$ = ReqServo$("MG MSWJreq", 0) 'Get the Wiping jog request flag
        MSWipingJogReq% = Val(I$)

        I$ = ReqServo$("MG MSWIreq", 0) 'Get the Wiping imps request flag
        MSWipingImpReq% = Val(I$)

        I$ = ReqServo$("MG ProdCal", 0) 'Get the Product calibration status
        ProductCalibrated% = Val(I$)

        I$ = ReqServo$("MG WipeCal", 0) 'Get the Wiping calibration status
        WipingCalibrated% = Val(I$)

        I$ = ReqServo$("MG RevCTR", 0) 'Get the Wiping calibration status
        SystemTickCounter# = Val(I$)

        I$ = ReqServo$("MG Iposerr", 0) 'Read Intaglio position error
        Iposerror! = CDbl(I$) / MasCPI!(7) 'Convert to inches by H axis scale

        I$ = ReqServo$("MG Dposerr", 0) 'Read Diecutter position error
        Dposerror! = CDbl(I$) / MasCPI!(7) 'Convert to inches by H axis scale

        I$ = ReqServo$("MG FlexPerr", 1) 'Read Flexo position error
        frmPressrun!MhRealInput11.Text = CDbl(I$)

        I$ = ReqServo$("MG NumPerr", 1) 'Read Numbering position error
        frmPressrun!MhRealInput10.Text = CDbl(I$)

        I$ = ReqServo$("MG CutPerr", 1) 'Read Cutoff position error
        frmPressrun!MhRealInput9.Text = CDbl(I$)

        I$ = ReqServo$("MG _TPH", 0) 'Get the IPC position
        frmConfig!MhRealInput2.Text = I$
```

Module2 - 14

```
        I$ = ReqServo$("MG VBlsampo", 0) 'Get the Intaglio Mark position
        frmConfig!MhRealInput11.Text = I$

        I$ = ReqServo$("MG DieMKpos", 0) 'Get the Diecutter Mark position
        frmConfig!MhRealInput13.Text = I$

        I$ = ReqServo$("MG Cregrefm", 1) 'Get the Cutoff Mark position
        frmConfig!MhRealInput14.Text = I$

        I$ = ReqServo$("MG @AN[1]", 0) 'Get PW roll dia data
        PWRewindDia = CSng(I$)

    End If

End Sub

Public Sub UpdateSystemVariables()

    'This routine called by AutoExec% to update variable data and
    'counters for general display update.

    Dim I&

'    If SystemRevTick% <> 0 Then
'        I& = MotionCntr& - LastMotionCntr&
'        Counter_NRS& = Counter_NRS& + I& 'Increment Master Non-reset counter
'        Counter_shift1& = Counter_shift1& + I& 'Increment Shift totalizer
'    End If

End Sub

Public Sub UpdateMotionSystemVars()

    'This routine downloads any motion system variables that have changed
    'during the current scan

    Dim I%, J%, K%, L&, M$, N, O#

    If VarChangeFlag%(0) <> 0 Then 'Intaglio register offset
        VarChangeFlag%(0) = 0
        I% = CmdServo1%("IntRoffs=" & Trim$(frmPressrun!MhRealInput3.Text))
    End If

    If VarChangeFlag%(1) <> 0 Then 'Diecutting register offset
        VarChangeFlag%(1) = 0
        I% = CmdServo1%("Dieoffs=" & Trim$(frmPressrun!MhRealInput6.Text))
        I% = CmdServo2%("Dieoffs=" & Trim$(frmPressrun!MhRealInput6.Text))
    End If

    If VarChangeFlag%(2) <> 0 Then 'Numbering register offset
        VarChangeFlag%(2) = 0
        I% = CmdServo2%("NumRoffs=" & Trim$(frmPressrun!MhRealInput2.Text))
    End If

    If VarChangeFlag%(3) <> 0 Then 'Cutoff register change
        VarChangeFlag%(3) = 0
        I% = CmdServo2%("CutRoffs=" & Trim$(frmPressrun!MhRealInput5.Text))
    End If

    If VarChangeFlag%(4) <> 0 Then 'System mode change
        VarChangeFlag%(4) = 0
        I% = CmdServo1%("SysMode=" & Trim$(Str$(SysMode%)))
        I% = CmdServo2%("SysMode=" & Trim$(Str$(SysMode%)))
        I% = CmdServo1%("PIEna=" & Trim$(Str$(IntInfeedEnable%)))
        I% = CmdServo1%("SHEna=" & Trim$(Str$(IntShuttleEnable%)))
        I% = CmdServo1%("POEna=" & Trim$(Str$(IntOutfeedEnable%)))
        I% = CmdServo1%("ChiEna=" & Trim$(Str$(IntChillrollEnable%)))
```

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```
        I% = CmdServo1%("WIEna=" & Trim$(Str$(IntWipingEnable%)))
        I% = CmdServo1%("SysRun=10")
        I% = CmdServo2%("SysRun=10")
    End If

    If VarChangeFlag%(5) <> 0 Then 'Intaglio Auto/manual status
        VarChangeFlag%(5) = 0
        I% = CmdServo1%("IntRauto=" & Trim$(Str$(RegIntaglioAuto%)))
    End If

    If VarChangeFlag%(6) <> 0 Then 'Diecutting Auto/manual status
        VarChangeFlag%(6) = 0
        I% = CmdServo1%("DieRauto=" & Trim$(Str$(RegDiecuttingAuto%)))
    End If

    If VarChangeFlag%(7) <> 0 Then 'Numbering Auto/manual status
        VarChangeFlag%(7) = 0
        I% = CmdServo2%("NumRauto" & Trim$(Str$(RegNumberingAuto%)))
    End If

    If VarChangeFlag%(8) <> 0 Then 'Cutoff Auto/manual status
        VarChangeFlag%(8) = 0
        I% = CmdServo2%("CutRauto=" & Trim$(Str$(RegCutoffAuto%)))
    End If

    If VarChangeFlag%(9) <> 0 Then 'Line speed change
        VarChangeFlag%(9) = 0
        I% = CmdServo1%("LinSpeed=" & Trim$(frmPressrun!Text2.Text))
        I% = CmdServo2%("LinSpeed=" & Trim$(frmPressrun!Text2.Text))
    End If

    VarChangeFlag%(10) = 0 ' ******* Function Disabled *******
    If VarChangeFlag%(10) <> 0 Then 'Numbering repeat length
        VarChangeFlag%(10) = 0
        N = System_circumference# * Intaglio_Mod_factor% / frmConfig!MhRealInput8.Text
        I% = CmdServo2%("CPRK=" & Trim$(Str$(N * Param_tbl$(1302, 2))))
        I% = CmdServo2%("CtWghtK=" & Trim$(Param_tbl$(1302, 2) / frmConfig!MhRealInput8.Text))
    End If

    VarChangeFlag%(11) = 0 ' ******* Function Disabled *******
    If VarChangeFlag%(11) <> 0 Then 'Cutoff repeat length
        VarChangeFlag%(11) = 0
        N = System_circumference# * Intaglio_Mod_factor% / frmConfig!MhRealInput9.Text
        I% = CmdServo2%("CPRL=" & Trim$(Str$(N * Param_tbl$(1402, 2))))
        I% = CmdServo2%("CtWghtL=" & Trim$(Param_tbl$(1402, 2) / frmConfig!MhRealInput9.Text))
    End If

    If VarChangeFlag%(12) <> 0 Then 'Flexo gearing bias
        VarChangeFlag%(12) = 0
        I% = CmdServo2%("BiasA=" & frmPressrun!MhRealInput1(0).Text)
    End If

    If VarChangeFlag%(13) <> 0 Then 'Product infeed gearing bias
        VarChangeFlag%(13) = 0
        I% = CmdServo1%("BiasA=" & frmPressrun!MhRealInput1(1).Text)
    End If

    If VarChangeFlag%(14) <> 0 Then 'SH1 gearing bias
        VarChangeFlag%(14) = 0
        I% = CmdServo1%("BiasB=" & frmPressrun!MhRealInput1(2).Text)
    End If

    If VarChangeFlag%(15) <> 0 Then 'SH2 gearing bias
        VarChangeFlag%(15) = 0
        I% = CmdServo1%("BiasC=" & frmPressrun!MhRealInput1(3).Text)
    End If
```

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```
    If VarChangeFlag%(16) <> 0 Then 'Product outfeed gearing bias
        VarChangeFlag%(16) = 0
        I% = CmdServo1%("BiasD=" & frmPressrun!MhRealInput1(4).Text)
    End If

    If VarChangeFlag%(17) <> 0 Then 'Wiping Infeed gearing bias
        VarChangeFlag%(17) = 0
        I% = CmdServo1%("BiasE=" & frmPressrun!MhRealInput1(5).Text)
    End If

    If VarChangeFlag%(18) <> 0 Then 'Wiping Outfeed gearing bias
        VarChangeFlag%(18) = 0
        I% = CmdServo1%("BiasF=" & frmPressrun!MhRealInput1(6).Text)
    End If

    If VarChangeFlag%(19) <> 0 Then 'Chill rolls gearing bias
        VarChangeFlag%(19) = 0
        I% = CmdServo1%("BiasG=" & frmPressrun!MhRealInput1(7).Text)
    End If

    If VarChangeFlag%(20) <> 0 Then 'Diecutting gearing bias
        VarChangeFlag%(20) = 0
        I% = CmdServo2%("BiasB=" & frmPressrun!MhRealInput1(8).Text)
    End If

    If VarChangeFlag%(21) <> 0 Then 'Numbering gearing bias
        VarChangeFlag%(21) = 0
        I% = CmdServo2%("BiasC=" & frmPressrun!MhRealInput1(9).Text)
    End If

    If VarChangeFlag%(22) <> 0 Then 'Sheeter gearing bias
        VarChangeFlag%(22) = 0
        I% = CmdServo2%("BiasD=" & frmPressrun!MhRealInput1(10).Text)
    End If

    If VarChangeFlag%(23) <> 0 Then 'Wiping speed trim change
        VarChangeFlag%(23) = 0
        I% = CmdServo1%("WipeTrim=" & frmP00Intaglio!Slider5.Value)
    End If

    If VarChangeFlag%(24) <> 0 Then 'Product calibration request
        VarChangeFlag%(24) = 0
        I% = CmdServo1%("???????????)
    End If

    If VarChangeFlag%(25) <> 0 Then 'Wiping calibration request
        VarChangeFlag%(25) = 0
        I% = CmdServo1%("????????????)
    End If

    If VarChangeFlag%(26) <> 0 Then 'Diecutting online changed
        VarChangeFlag%(26) = 0
        I% = CmdServo2%("DieEna=" & Trim$(Str$(DiecuttingEnable%)))
        I% = CmdServo2%("SysRun=10")
    End If

    If VarChangeFlag%(27) <> 0 Then 'Numbering online changed
        VarChangeFlag%(27) = 0
        I% = CmdServo2%("NumEna=" & Trim$(Str$(NumberingEnable%)))
        I% = CmdServo2%("SysRun=10")
    End If

    If VarChangeFlag%(28) <> 0 Then 'Cutoff online changed
        VarChangeFlag%(28) = 0
        I% = CmdServo2%("CutEna=" & Trim$(Str$(CutoffEnable%)))
        I% = CmdServo2%("SysRun=10")
    End If
```

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```
    If VarChangeFlag%(29) <> 0 Then 'System Circumference changed
        VarChangeFlag%(29) = 0
        System_circumference# = frmConfig!MhRealInput7.Text
        frmConfig!Label2.Visible = False 'Clear Cam table light
        Call Calculate_Flexo_modulus
        I% = CmdServo1%("SysCirc=" & Trim$(Str$(System_circumference#)))
        I% = CmdServo2%("SysCirc=" & Trim$(Str$(System_circumference#)))
        I% = CmdServo1%("MIctwght=" & Trim$(Str$(MasCPR!(7) / System_circumference#)))
        I% = CmdServo2%("MIctwght=" & Trim$(Str$(MasCPR!(7) / System_circumference#)))
        I% = CmdServo2%("CPRDX=" & Trim$(Format$(Intaglio_CPR!, "##########")))
        I% = CmdServo2%("CPRI=" & Trim$(Format$(Flexo_CPR!, "##########")))
        O# = Param_tbl$(1202, 2) * (System_circumference# / Param_tbl$(1232, 2))
        I% = CmdServo2%("CPRJ=" & Trim$(Format$(O#, "##########")))
        'VarChangeFlag%(10) = 1 'Trigger recalc of Numbering and Cutoff
        'VarChangeFlag%(11) = 1
        I% = CmdServo1%("SysRun=10")
        I% = CmdServo2%("SysRun=10")
    End If

    If VarChangeFlag%(30) <> 0 Then 'Inker #1 Auto speed change
        VarChangeFlag%(30) = 0
'       I% = CmdServo1%("???????????")
    End If

    If VarChangeFlag%(31) <> 0 Then 'Inker #1 Manual speed change
        VarChangeFlag%(31) = 0
'       I% = CmdServo1%("?????????????")
    End If

    If VarChangeFlag%(32) <> 0 Then 'Inker #2 Auto speed change
        VarChangeFlag%(32) = 0
'       I% = CmdServo1%("?????????????")
    End If

    If VarChangeFlag%(33) <> 0 Then 'Inker #2 Manual change
        VarChangeFlag%(33) = 0
'       I% = CmdServo1%("??????????????")
    End If

    If VarChangeFlag%(34) <> 0 Then 'Inker #1 mode
        VarChangeFlag%(34) = 0
'       I% = CmdServo1%("???????????????")
    End If

    If VarChangeFlag%(35) <> 0 Then 'Inker #2 mode
        VarChangeFlag%(35) = 0
'       I% = CmdServo1%("???????????????")
    End If

    If VarChangeFlag%(36) <> 0 Then 'Intaglio Impression mode
        VarChangeFlag%(36) = 0
'       I% = CmdServo1%("????????????????")
    End If

    If VarChangeFlag%(37) <> 0 Then 'Intaglio Wiping mode
        VarChangeFlag%(37) = 0
        I% = CmdServo1%("WipeMode=" & Str$(IntaglioWipeControl%))
    End If

    If VarChangeFlag%(38) <> 0 Then 'Intaglio Prewipe mode
        VarChangeFlag%(38) = 0
'       I% = CmdServo1%("????????????????")
    End If

    If VarChangeFlag%(39) <> 0 Then 'Flexo Impression mode
        VarChangeFlag%(39) = 0
```

```
Module2 - 18

'       I% = CmdServo1%("???????????????")
    End If

    If VarChangeFlag%(40) <> 0 Then 'Wiping Manual OFF/ON mode
        VarChangeFlag%(40) = 0
        I% = CmdServo1%("WipeMoo=" & Str$(IntaglioWipeManual%))
    End If

    If VarChangeFlag%(41) <> 0 Then 'Recalculate Cam table
        I% = CmdServo1%("TrigCam=" & Str$(VarChangeFlag%(41)))
        If VarChangeFlag%(41) = 1 Then
            I% = CmdServo2%("DEX=0")
            I% = CmdServo2%("DPX=0")
            I% = CmdServo2%("DPZ=0")
            I% = CmdServo2%("DPW=0")
            I% = CmdServo2%("AxisDXa[0]=0")
            I% = CmdServo2%("AxisDXa[3]=0")
            I% = CmdServo2%("AxisDXb[0]=0")
            I% = CmdServo2%("AxisDXb[3]=0")
            I% = CmdServo2%("AxisX[0]=0")
            I% = CmdServo2%("AxisX[3]=0")
            I% = CmdServo2%("AxisZ[0]=0")
            I% = CmdServo2%("AxisZ[3]=0")
            I% = CmdServo2%("AxisW[0]=0")
            I% = CmdServo2%("AxisW[3]=0")
        End If
        VarChangeFlag%(41) = 0
    End If

    If VarChangeFlag%(42) <> 0 Then 'Altering IP offset
        VarChangeFlag%(42) = 0
        I% = CmdServo1%("PD " & Trim$(Str$(IP_Move%)))
    End If

    If VarChangeFlag%(43) <> 0 Then 'Flexo register change
        VarChangeFlag%(43) = 0
        I% = CmdServo2%("Flexoffs=" & Trim$(frmPressrun!MhRealInput4.Text))
    End If

    If VarChangeFlag%(44) <> 0 Then 'Intaglio Mark window begin
        VarChangeFlag%(44) = 0
        I% = CmdServo1%("IntLwin=" & frmConfig!MhRealInput3.Text)
    End If

    If VarChangeFlag%(45) <> 0 Then 'Intaglio Mark window end
        VarChangeFlag%(45) = 0
        I% = CmdServo1%("IntUwin=" & frmConfig!MhRealInput10.Text)
    End If

    If VarChangeFlag%(46) <> 0 Then 'Diecutting Mark window begin
        VarChangeFlag%(46) = 0
        I% = CmdServo1%("DieLwin=" & frmConfig!MhRealInput4.Text)
    End If

    If VarChangeFlag%(47) <> 0 Then 'Diecutting Mark window end
        VarChangeFlag%(42) = 0
        I% = CmdServo1%("DieUwin=" & frmConfig!MhRealInput12.Text)
    End If

    If VarChangeFlag%(48) <> 0 Then 'Cutoff Mark window begin
        VarChangeFlag%(48) = 0
        I% = CmdServo2%("CutLwin=" & frmConfig!MhRealInput5.Text)
    End If

    If VarChangeFlag%(49) <> 0 Then 'Cutoff Mark window end
        VarChangeFlag%(49) = 0
        I% = CmdServo2%("CutUwin=" & frmConfig!MhRealInput1.Text)
```

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```
    End If

    If VarChangeFlag%(50) <> 0 Then 'Forces uncalibrate on Product
        VarChangeFlag%(50) = 0
        I% = CmdServo1%("ProdCal=0")
    End If


End Sub

Public Sub AutoIntegrator()

    'Routine monitors position error on CF1 axis and makes long term
    'gear ratio adjustments to correct print length errors, etc.

'    If CF1error! < 0 Then
'        If LastCF1% < 0 Then
'            CF1errorcnt% = CF1errorcnt% + 1 'This is the # of contiguous errors
'            If CF1errorcnt% > CInt(Param_tbl$(928, 2)) Then
'                frmWPsetup!MhRealInput1(5).Text = frmWPsetup!MhRealInput1(5).Text + CDbl(Param_
tbl$(927, 2))
'                VarChangeFlag%(12) = 1
'                CF1errorcnt% = 0
'            End If
'            Else
'            LastCF1% = 1
'            CF1errorcnt% = 1
'        End If
'        Else
'        If LastCF1% > 0 Then
'            CF1errorcnt% = CF1errorcnt% + 1
'            If CF1errorcnt% > CInt(Param_tbl$(928, 2)) Then
'                frmWPsetup!MhRealInput1(5).Text = frmWPsetup!MhRealInput1(5).Text - CDbl(Param_
tbl$(927, 2))
'                VarChangeFlag%(12) = 1
'                CF1errorcnt% = 0
'            End If
'            Else
'            LastCF1% = -1
'            CF1errorcnt% = 1
'        End If
'    End If

End Sub
```

```
Module1 - 1

    'Program         : General
    'Creation date   : 02-Apr-97
    'Module          : PLC_module.BAS
    'Version         : V2.0
    'Edit            : -00
    'Edit date       : 02-Nov-00
    'Author          : Joseph B. Schutte III
    '                  Industrial Light & Motion, Inc.
    '                  2170 Van Blaricum Rd.
    '                  Cincinnati OH  USA
    '
    'Copyright (C) 1997-2000 Industrial Light & Motion, Inc.
    '
    'Revision History
    '
    'Ver/Edit    Edit date    Who      Reason
    'V2.0-00     02-Nov-00    JBSIII   Rewrite logic for Press_00
    'V1.0-01     03-Apr-97    JBSIII   Add Run/Stop function
    '

    Option Explicit


    ' P L C   D i s c r e t e   I n p u t   D e f i n i t i o n s
    '

    'Parallel I/O channel definitions:                                    28-Sep-00  11:05

    'Inputs

    'Channel                Function
    '-------------------------------------------------------------------------------------------
    'I00             ESTOP
    'I01             Intaglio PB: Wiping Jog
    'I02             Intaglio PB: Press Jog
    'I03             Intaglio PB: Product Calibrate
    'I04             Intaglio PB: Wiping Calibrate
    'I05             Console: STOP
    'I06             Console: RUN
    'I07             Console: JOG
    '-------------------------------------------------------------------------------------------
    'I08             Console: Line speed Increase
    'I09             Console: Line speed Decrease
    'I10             Console: Press Enable Keyswitch
    'I11             Console: Product Vacuum Box Blower
    'I12             Console: Wiping Vacuum Box Blower
    'I13             Rt Intaglio PB: Press Run
    'I14             Rt Intaglio PB: Press Jog
    'I15             Rt Intaglio PB: Press Stop
    '-------------------------------------------------------------------------------------------
    'I16             Console Jam-up stop button
    'I17             Intaglio Outfeed Webbreak switch
    'I18             Wired to #17 was Cutoff infeed Webbreak switch
    'I19             Wiping paper Infeed Webbreak switch
    'I20             Web Splice detect
    'I21             Hydraulic Pressure OK sensor
    'I22             Rt Intaglio PB: Wiping Jog PB
    'I23             Rt Intaglio PB: Press speed Increase
    '-------------------------------------------------------------------------------------------
    'I24             Rt Intaglio PB: Press speed Decrease
    'I25             Rt Intaglio PB: Wiping Nip manual OFF/ON
    'I26             Wiping Drive ready
    'I27             Main Drive ready
    'I28             SH1 Overtemp
    'I29             SH2 Overtemp
    'I30             Rt Intaglio PB: Prewipe manual Nip Off/On
    'I31             Rt Intaglio PB: Inker #1 manual Run
```

Module1 - 2

```
'-------------------------------------------------------------------------------
'I32            Rt Intaglio PB: Inker #2 manual Run
'I33            Rt Intaglio PB: Inker #1 manual Nip Off/On
'I34            Rt Intaglio PB: Inker #2 manual Nip Off/On
'I35            Rt Intaglio PB: Inker #1 manual Run
'I36            Rt Intaglio PB: Inker #2 manual Run
'I37            Rt Intaglio PB: Inker #1 manual Nip Off/On
'I38            Rt Intaglio PB: Inker #2 manual Nip Off/On
'I39            Numbering Unit #1 Off/On Wire #308
'-------------------------------------------------------------------------------
'I40            Numbering Unit #2 Off/On Wire #307
'I41            Numbering Unit Web break   Wire #306 - Not installed
'I42            Sheeter: Press Jog  Wire #303
'I43            Sheeter: Press Stop   Wire #304
'I44            Sheeter: Jamup Stop   Wire #305
'I45            Intaglio Guard
'I46            Numbering Guard
'I47            Sheeter Guard
'-------------------------------------------------------------------------------
'I48
'I49
'I50            Sheeter: Press speed Increase    Wire #300
'I51            Sheeter: Press speed Decrease    Wire #301
'I52
'I53            Unwind Core sensor
'I54            Delivery Table Down LS
'I55            Sheeter: Press Run   Wire #302
'-------------------------------------------------------------------------------
'I56            Flexo PB's: Press Stop
'I57            Flexo PB's: Press Jog
'I58            Flexo PB's: Press Run
'I59            Flexo PB's: Increase Line Speed
'I60            Flexo PB's: Decrease Line Speed
'I61            Flexo PB's: Auto/Manual PB
'I62            Flexo PB's: Rewind Forward Select
'I63            Flexo PB's: Rewind Reverse Select
'-------------------------------------------------------------------------------
'I64
'I65
'I66            Unwind Web break
'I67            Flexo-Intaglio Web break
'I68            Chill Rolls Web break
'I69            Sheeter Web break
'I70
'I71            Flexo/Die Jam-up stop buttons

' P L C   D i s c r e t e   O u t p u t   D e f i n i t i o n s

'Outputs

'Channel                Function
'-------------------------------------------------------------------------------
'O00            Power ON (Mains)
'O01            Intaglio PB: Product Calibrated
'O02            Intaglio PB: Wiping Calibrated
'O03            Primary Power Transformer Contactor
'O04            Main Drive Contactor
'O05            Main Drive Enable
'O06            Main Drive RAMP Relay
'O07
'-------------------------------------------------------------------------------
'O08            Wired to #35 Web Cleaner / Vac box blower starter
'O09            Inker #2 Drive enable relay
'O10            Main Drive brake relay
'O11            Splice Detector enable
'O12            Hydraulic Pump Contactor
'O13            Hydraulic Pressure LOW mode solenoid
```

```
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    '014            Intaglio Impression ON solenoid
    '015            Inker #1 Drive enable relay
    '-------------------------------------------------------------------------------
    '016            Inker #1 Nip ON solenoid
    '017            Prewipe Roll engage solenoid
    '018            Wiping Drive Contactor
    '019            Wiping Roll engage solenoid
    '020            Wiping Drive enable
    '021            Inker #2 Nip ON solenoid
    '022            Wiping Rewinder Drive enable
    '023            Wiping Rewinder Brake enable/
    '-------------------------------------------------------------------------------
    '024            Cutoff Unit Infeed drive enable
    '025            Cutoff Unit Infeed Brake enable/
    '026            Cutoff Unit Drive enable
    '027            Cutoff Unit Brake enable/
    '028            Rt Intaglio PB: Wiping Nip ON
    '029            Rt Intaglio PB: Prewipe Nip ON
    '030            Rt Intaglio PB: Inker #1 Running
    '031            Rt Intaglio PB: Inker #1 Nip ON
    '-------------------------------------------------------------------------------
    '032            Rt Intaglio PB: Inker #2 Running
    '033            Rt Intaglio PB: Inker #2 Nip ON
    '034            Flexo Impression Solenoid
    '035            Flexo Auto/Manual Solenoid
    '036            Flexo Rewinder Forward Solenoid
    '037            Flexo Rewinder Reverse Solenoid
    '038            Flexo UV Unit Enable solenoid
    '039            Product Vacuum blower solenoid
    '-------------------------------------------------------------------------------
    '040            Wiping Vacuum blower solenoid
    '041            Scrap blower solenoid
    '042            Numbering Unit 1 ON solenoid
    '043            Numbering Unit 2 ON solenoid
    '044
    '045
    '046            Motion warning bell
    '047


    Global ActualLinSpeed%       'Actual Line Speed  in FPM
    Global ActualWipingSpeed%    'Actual (commanded) Wiping Speed FPM
    Global DecelMode%            'Determines decel rate; normal=0, web break=1
    Global FlexoImpsControl%     '0-off 1-manual 2-auto
    Global FlexoImpsManual%      '0-off 1-manual on
    Global GuardsOK%             'Set when no guard switches open
    Global GuardsBypassed%       'Set when operator bypasses switches in Wpsetup
    Global Hydraulics%           '0-off 1-low 2-normal
    Global IntaglioImpsControl% '0-off 1-manual 2-auto
    Global IntaglioImpsManual%  '0-off 1-on
    Global IntaglioWipeControl% '0-off 1-manual 2-auto
    Global IntaglioWipeManual%  '0-off 1-on
    Global IntaglioPrewipeControl% '0-off 1-manual 2-auto
    Global IntaglioPrewipeManual% '0-off% 1-on
    Global IntaglioInker1Control% '0-off 1-manual 2-auto
    Global IntaglioInker1nip%    '0-off 1-on
    Global IntaglioInker1Manrun% '0-off 1-on
    Global IntaglioInker2Control% '0-off 1-manual 2-auto
    Global IntaglioInker2nip%    '0-off 1-on
    Global IntaglioInker2Manrun% '0-off 1-on
    Global JamButtonsOK%         'Intermediate variable set when all jam btns OFF
    Global JogRequest%           'Set when operator presses Jog button
    Global JogSpeed%             'Press Jog Speed
    Global Keyswitch%            'State of console keyswitch
    Global LastTlineSpeed%       'Previous scan line TargetLineSpeed%
    Global LastIntaglioRmode%    'Last intaglio run mode
```

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```
    Global LastIntaglioWipemode% 'Last scan intaglio wiping mode
    Global LastRunMode%          'Previous scan RunMode%
    Global LinSpeedIntegrator!   'Used for speed ramp generator
    Global MachineOKtoRun%       'Bit set when machine is ready to run
    Global MachineRunning%       'Set when machine in the RUN mode
    Global MaxLineSpeed%         'Maximum line speed in strokes per min x 10
    Global MinLineSpeed%         'Minimum line speed in strokes per min x 10
    Global MSIntaglioJogReq%     'Motion system request for Intaglio Jog
    Global MSWipingJogReq%       'Motion system requet for Wiping Jog
    Global MSWipingImpReq%       'Motion system request for Wiping Imps
    Global Numbering_1_on%       'Numbering unit 1 sequencer
    Global Numbering_2_on%       'Numbering unit 2 sequencer
    Global PilerInhAuto%         'Set when High piler prox switch disabled
    Global PLC_RunMode%          'Must be set for PLC code to execute
    Global ProductCalRequest%    'Set when Operator presses cal button
    Global ProductCalReqS%       'Variable from screen request for cal
    Global RequestFastStop%      'Set when a one second stop required
    Global RequestNormStop%      'Set when normal stop has been requested
    Global RunMode%              'Decoded mode from PLC logic
    Global RunRequest%           'Operator has requested run, timing commensing
    Global ScrapRequest%         'VB screen activates and we map to Output here
    Global SetupOK%              'True when sufficient setup data avail for cal
    Global TargetLinSpeed%      'Operator setpoint line speed FPM = Value / 10
    Global WebBreaksOK%          'Set when no web break switches tripped
    Global WipingCalRequest%     'Set when operator presses cal button
    Global WipingCalReqS%        'Variable for signal from screen for req.
    Global WipingJogReq%         'Variable for Wiping jog status
    Global WipingWinderEna%      'Enable status of wiping rewinder

    Dim PLC_t1%                  'Temporary working registers
    Dim PLC_t2%
    Dim PLC_t3%
    Dim PLC_t4%
    Dim PLC_t5%
    Dim PLC_t6%
    Dim PLC_t7%
    Dim PLC_t8%
    Dim PLC_t9%
    Dim PLC_t10%

Public Sub PLC_FirstScan()

    'This routine handles all initial settings by being called on powerup.

    Dim I%

    Call ScanPLCInputs

    MachineRunning% = 0 'Machine run state; initially stopped
    DecelMode% = 0 'Normal stop when 0, Jamup/Webbreak stop when 1
    RequestNormStop% = 0
    RequestFastStop% = 0
    JogRequest% = 0
    WipingCalRequest% = 0
    ProductCalRequest% = 0
    MachineCalibrated% = 0
    FlexoCalibrated% = 0
    IntaglioCalibrated% = 0
    LastIntaglioRmode% = 0
    PilerInhAuto% = 0
    JamButtonsOK% = 1
    Numbering_1_on% = 0
    Numbering_2_on% = 0
    GuardsOK% = 1
    ScrapRequest% = 0
    WipingWinderEna% = 0
    frmP00Intaglio!Label57.Visible = True
```

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```
    frmP00Intaglio!Label7.Visible = False
    frmP00Intaglio!Label5.Visible = False
'    Call Hyd_Init_Off
    Call IntImps_Init_Off
    Call IntWipe_Init_Off
    Call IntPrewipe_Init_Off
    Call IntInker1_Init_Off
    Call IntInker2_Init_Off
    WebBreaksOK% = 1
    MinLineSpeed% = CInt(Param_tbl$(901, 2))
    MaxLineSpeed% = CInt(Param_tbl$(902, 2))
    frmPressrun!Slider1.Value = MinLineSpeed% 'Get initial speed from parameter table
    PLC_O%(0) = 0 'Main Power Off
    PLC_O%(1) = 0 'Kill Product calibrated light
    PLC_O%(2) = 0 'Kill Wiping calibrated light
    PLC_O%(3) = 0 'Turn off primary xformer
    PLC_O%(4) = 0 'Turn off Main drive contactor
    PLC_O%(5) = 0 'Turn off main drive enable
    PLC_O%(6) = 0 'Shift main drive ramp to fast
    PLC_O%(7) = 0 'Not Used
    PLC_O%(8) = 0 'Scrap Blower primary
    PLC_O%(9) = 0 'Disable #2 Inker
    PLC_O%(10) = 0 'Engage Main drive brake
    PLC_O%(11) = 0 'Disable Splice Detector
    PLC_O%(12) = 0 'Turn off hydraulic pump
    PLC_O%(13) = 1 'Shift hydraulic pressure to low
    PLC_O%(14) = 0 'Turn off Intaglio impressions
    PLC_O%(15) = 0 'Disable Inker #1 drive
    PLC_O%(16) = 0 'Turn OFF Inker #1 Nip
    PLC_O%(17) = 0 'Disengage Prewipe roller
    PLC_O%(18) = 0 'Turn off Wiping drive contactor
    PLC_O%(19) = 0 'Disengage Wiping roller
    PLC_O%(20) = 0 'Disable Wiping drive
    PLC_O%(21) = 0 'Not Used
    PLC_O%(22) = 0 'Disable Wiping rewind drive
    PLC_O%(23) = 0 'Enable Wiping rewind brake
    PLC_O%(24) = 0 'Disable Cutoff Unit infeed drive
    PLC_O%(25) = 0 'Enable Cutoff unit infeed brake
    PLC_O%(26) = 0 'Disable Cutoff unit drive
    PLC_O%(27) = 0 'Enable Cutoff Unit brake
    PLC_O%(28) = 0 'Kill Wiping nip on light
    PLC_O%(29) = 0 'Kill Prewipe nip on light
    PLC_O%(30) = 0 'Kill Inker #1 running light
    PLC_O%(31) = 0 'Kill Inker #1 nip on light
    PLC_O%(32) = 0 'Kill Inker #2 running light
    PLC_O%(33) = 0 'Kill Inker #2 nip on light
    PLC_O%(34) = 0 'Turn off Flexo Impression soleniod
    PLC_O%(35) = 0 'Select Flexo Manual mode
    PLC_O%(36) = 0 'Turn off Flexo Rewinder forward solenoid
    PLC_O%(37) = 0 'Turn off Flexo Rewinder reverse solenoid
    PLC_O%(38) = 0 'Disable Flexo UV System
    PLC_O%(39) = 0 'Turn off Product vacuum blower
    PLC_O%(40) = 0 'Turn off Wiping vacuum blower
    PLC_O%(41) = 0 'Turn off scrap blower
    PLC_O%(42) = 0 'Not used
    PLC_O%(43) = 0 'Not used
    PLC_O%(44) = 0 'Not used
    PLC_O%(45) = 0 'Not used
    PLC_O%(46) = 0 'Motion warning bell
    PLC_O%(47) = 0 'Not used


    Call StrobePLCOutputs

    PLC_RunMode% = 1 'Enable scanning

End Sub
```

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```
Public Sub PLC_Scan()

    'This routine gets called every N milliseconds by the MAIN.FRM PLC
    'timer. The equations will be evaluated only if RunMode% is set as
    'non-zero.

    Dim I%, J%

    MachineCalibrated% = 255 '????????????? Temporary force OK

    If PLC_RunMode% <> 0 Then

        Call ScanPLCInputs 'Read the PLC inputs

        If PLC_I%(0) = 0 Then
            Call PLC_FirstScan
        Else 'If we're ESTOP do nothing but hold off outputs

        If (PLC_I%(0) <> 0) And (PLC_I%(1) = 0) And (PLC_I%(2) = 0) And (PLC_O%(0) = 0) Then
            PLC_O%(0) = 1 'Systemwide power on flag
            PLC_O%(3) = 1 'Primary transformer contactor
        End If
        'Look for Main power on request

        If SysMode% = 0 Then 'Flexo only mode
            PLC_O%(4) = 0 'Main drive contactor
            PLC_O%(18) = 0 'Wiping drive contactor
            Else 'Combi mode - turn on drives
            PLC_O%(4) = 1
            PLC_O%(18) = 1
        End If

        If (((PLC_I%(44) <> 0) Or (PLC_I%(16) = 0) Or (PLC_I%(71) = 0)) And JamButtonsOK% = 1) T
hen
            JamButtonsOK% = 0
            RequestFastStop% = 1
        End If
        'Handle Jam up Stop buttons / switches

        If ((PLC_I%(44) = 0) And JamButtonsOK% = 0) Then
            JamButtonsOK% = 1
        End If
        'Detect end of jam up stop condition

        If ((PLC_I%(6) <> 0) Or (PLC_I%(13) <> 0) Or (PLC_I%(55) <> 0) Or (PLC_I%(58) <> 0)) And
 (MachineOKtoRun% <> 0) And (MachineRunning% = 0) Then
            RunRequest% = 1
            Else
            RunRequest% = 0
        End If
        'Handle Run buttons

        If (PLC_I%(5) <> 0) Or (PLC_I%(15) <> 0) Or (PLC_I%(43) <> 0) Or (PLC_I%(56) = 0) Then
            RunRequest% = 0 'In case they just pressed the Run button
            RequestNormStop% = 1 'Sequence machine to stop
        End If
        'Handle the Normal Stop buttons

        'If (PLC_I%(21) <> 0) Or (PLC_I%(54) <> 0) Then
        '    RunRequest% = 0 'In case they just pressed the Run button
        '    RequestNormStop% = 1 'Sequence machine to stop
        'End If
        'Handle the Machine induced stops that do not require Fast Stops

        If ((PLC_I%(2) <> 0) Or (PLC_I%(7) <> 0) Or (PLC_I%(14) <> 0) Or (PLC_I%(42) <> 0) Or (P
LC_I%(57) <> 0)) And (MachineRunning% = 0) And (JamButtonsOK% <> 0) Then
```

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```
            JogRequest% = 1
        End If
        'Handle the Jog buttons Machine must be not be running or in jam up stop state
        'Jog and Increase buttons together cause Turbo jog 4X speed

        If ((PLC_I%(2) = 0) And (PLC_I%(7) = 0) And (PLC_I%(14) = 0) And (PLC_I%(42) = 0) And (P
LC_I%(57) = 0) And (JogRequest% = 1)) Then
            JogRequest% = 0 'Terminate Jog if they released the button
        End If

        If ((PLC_I%(1) <> 0) Or (PLC_I%(22) <> 0)) And (IntaglioWipeControl% = 1) And (MachineRu
nning% = 0) Then 'Wiping Jog PB pressed
            WipingJogReq% = 1
        End If
        'Look for a Wiping Jog button

        If (PLC_I%(1) = 0) And (PLC_I%(22) = 0) And (WipingJogReq% = 1) Then
            WipingJogReq% = 0
        End If
        'Look for Wiping Jog button release

        If ((PLC_I%(3) <> 0) Or (ProductCalReqS% <> 0)) And (MachineRunning% = 0) And (JogReques
t% = 0) Then
            ProductCalRequest% = 1 'Set the calibrate status bit
        End If
        'Detect Operator Cal product request

        If ((PLC_I%(3) = 0) And (ProductCalReqS% = 0)) Or (ProductCalibrated% = 255) Then
            ProductCalRequest% = 0 'Clear the Homing request
        End If
        'Operator has released the Calibrate / Homing button

        If ((PLC_I%(4) <> 0) Or (WipingCalReqS% <> 0)) And (MachineRunning% = 0) And (JogRequest
% = 0) Then
            WipingCalRequest% = 1 'Set the calibrate status bit
        End If
        'Detect Operator Cal wiping request

        If ((PLC_I%(4) = 0) And (WipingCalReqS% = 0)) Or (WipingCalibrated% = 255) Then
            WipingCalRequest% = 0 'Clear the calibrate request
        End If
        'Operator has released the Calibrate / Homing button

        If ProductCalibrated% = 255 Then
            PLC_O%(1) = 1 'Activate Product calibrated light
            frmP00Intaglio!Label1.Visible = True
            frmPressrun!Label39.BackColor = &HFF00&    'Green
            Else
            PLC_O%(1) = 0
            frmP00Intaglio!Label1.Visible = False
            frmPressrun!Label39.BackColor = &HFFFFFF
        End If
        'Monitor product calibrated status and map to light

        If WipingCalibrated% = 255 Then
            PLC_O%(2) = 1 'Activate Wiping calibrated light
            frmP00Intaglio!Label24.Visible = True
            frmPressrun!Label40.BackColor = &HFF00& 'Green
            Else
            PLC_O%(2) = 0
            frmP00Intaglio!Label24.Visible = False
            frmPressrun!Label40.BackColor = &HFFFFFF 'White
        End If
        'Monitor Wiping calibrated status and map to light

        J% = PLC_I%(17) + PLC_I%(66) + PLC_I%(67) + PLC_I%(68)
        If CutoffEnable% <> 0 Then J% = J% + PLC_I%(69) 'Use sheeter if enabled
```

```
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        If NumberingEnable% <> 0 Then J% = J% + PLC_I%(41) 'Use numbering if enabled
        If (J% <> 0) Or ((PLC_I%(19) <> 0) And (SysMode% <> 1)) Then
            WebBreaksOK% = 0
            Else
            WebBreaksOK% = 1
        End If
        'Monitor Web break switches; 1 = OK    0 = Break
        'Only test wiping if we're using it

        If ((PLC_I%(45) = 0) Or (PLC_I%(46) = 0) Or (PLC_I%(47) = 0)) Then
            GuardsOK% = 0
            Else
            GuardsOK% = 1
        End If
        If GuardsBypassed% = 1 Then GuardsOK% = 1 'Operator bypass on P00Flexo
        'Monitor guard switches; 1 = OK     0 = Door open

        If ((WebBreaksOK% = 0) Or (GuardsOK% = 0) Or (JamButtonsOK% = 0) Or (MachineCalibrated%
<> 255)) Then
            RunRequest% = 0
            MachineOKtoRun% = 0 'Some fault condition exists
            Else
            MachineOKtoRun% = 1 'All subsystems OK
        End If
        'Monitor all machine fault detectors

        If (MachineRunning% = 2) And (MachineOKtoRun% = 0) And (RequestFastStop% = 0) Then
            RequestFastStop% = 1
        End If
        'Monitor Web break and guard switches

        Keyswitch% = PLC_I%(10) 'Map Keyswitch to variable
        If Keyswitch% <> 0 Then
            frmPressrun!Label20.Visible = True
            Else
            frmPressrun!Label20.Visible = False
        End If

        If ((PLC_I%(8) <> 0) Or (PLC_I%(23) <> 0) Or (PLC_I%(50) <> 0) Or (PLC_I%(59) <> 0)) The
n
            If ((PLC_I%(2) <> 0) Or (PLC_I%(7) <> 0) Or (PLC_I%(14) <> 0) Or (PLC_I%(42) <> 0) O
r (PLC_I%(57) <> 0)) Then
                TargetLinSpeed% = TargetLinSpeed% + 0
                Else
                I% = TargetLinSpeed% + 1
                frmPressrun!Slider1.Value = I%
            End If
        End If
        'Handle Increase speed buttons. 4000 = 400 Feet per min

        If ((PLC_I%(9) <> 0) Or (PLC_I%(24) <> 0) Or (PLC_I%(51) <> 0) Or (PLC_I%(60) <> 0)) The
n
            I% = TargetLinSpeed% - 1
            frmPressrun!Slider1.Value = I%
        End If
        'Handle Decrease speed button

        If ((PLC_I%(8) <> 0) And (PLC_I%(9) <> 0)) Or ((PLC_I%(23) <> 0) And (PLC_I%(24) <> 0))
Then
            frmPressrun!Slider1.Value = 25
        End If
        If ((PLC_I%(50) <> 0) And (PLC_I%(51) <> 0)) Or ((PLC_I%(59) <> 0) And (PLC_I%(60) <> 0)
) Then
            frmPressrun!Slider1.Value = 25
        End If
        'Hidden speed jump to 25 FPM
```

```
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        If ((PLC_I%(20) <> 0) And (PLC_O%(11) <> 0) And (MachineRunning% <> 0) And (MachineRunni
ng% <> 5)) Then
            RequestFastStop% = 1
        End If
        'Detect splices when machine is running

        If ((PLC_I%(53) <> 0) And (MachineRunning% <> 0) And (MachineRunning% <> 5)) Then
            RequestFastStop% = 1
        End If
        'Mill roll out (core sensor)

        If ((PLC_I%(62) <> 0) And (PLC_I%(63) = 0)) Then
            PLC_O%(36) = 1
            Else
            PLC_O%(36) = 0
        End If
        'Control product rewinder forward solenoid

        If ((PLC_I%(63) <> 0) And (PLC_I%(62) = 0)) Then
            PLC_O%(37) = 1
            Else
            PLC_O%(37) = 0
        End If
        'Control product rewinder reverse solenoid

        If (WipingWinderEna% = 0) And (PLC_O%(22) <> 0) Then
            PLC_O%(22) = 0 'Kill enable
            PLC_O%(23) = 0 'Enable brake
        End If
        If (WipingWinderEna% > 0) And (PLC_O%(22) = 0) Then
            PLC_O%(22) = 1 'Kill enable
            PLC_O%(23) = 1 'Enable brake
        End If
        ' This the Wiping rewinder logic

        PLC_O%(39) = PLC_I%(11) 'Map the Product Vacuum blower
        PLC_O%(40) = PLC_I%(12) 'Map the Wiping Vacuum blower

        If ((PLC_I%(39) <> 0) And (PLC_I_Last%(39) = 0)) Then
            Call Numbers1_Man_Toggle
        End If
        If ((PLC_I%(40) <> 0) And (PLC_I_Last%(40) = 0)) Then
            Call Numbers2_Man_Toggle
        End If
        PLC_O%(42) = Numbering_1_on%
        PLC_O%(43) = Numbering_2_on%
        'Map the Numbering unit controls

        PLC_O%(41) = ScrapRequest%
        PLC_O%(8) = ScrapRequest%

        Select Case Hydraulics% 'Hydraulic System Control
            Case 0 'Off
            PLC_O%(12) = 0 'Pump motor
            PLC_O%(13) = 0 'Pressure control
            Case 1 'Low pressure
            PLC_O%(12) = 1
            PLC_O%(13) = 1
            Case 2 'Normal pressure
            PLC_O%(12) = 1
            PLC_O%(13) = 0
        End Select
        '-------------------------------------------------------

        Select Case FlexoImpsControl% 'Flexo Impression Control
            Case 0 ' Off
            PLC_O%(35) = 0 'Manual control
```

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```
        PLC_O%(34) = 0 'Turn off output
        Case 1 ' Manual
        PLC_O%(35) = 1 ' Auto solenoid
        If ((PLC_I%(61) <> 0) And (PLC_I_Last%(61) = 0)) Then
            Call FlexoImps_Man_Toggle
        End If
        PLC_O%(34) = FlexoImpsManual%
        Case 2 'Auto
        PLC_O%(35) = 1 'Auto solenoid on
        If (ActualLinSpeed% > Param_tbl$(909, 2)) Then
            PLC_O%(34) = 1
            Else
            PLC_O%(34) = 0
        End If
    End Select
    '-------------------------------------------------------

    Select Case IntaglioImpsControl% 'Intaglio Impression Control
        Case 0 ' Off
        PLC_O%(14) = 0 'Turn off output
        Case 1 ' Manual
        PLC_O%(14) = IntaglioImpsManual%

        Case 2 'Auto
        If (ActualLinSpeed% > Param_tbl$(910, 2)) Then
            PLC_O%(14) = 1
            Else
            PLC_O%(14) = 0
        End If
    End Select
    '-------------------------------------------------------

     Select Case IntaglioWipeControl% 'Intaglio Wiping Control

        Case 0 ' Off
        PLC_O%(19) = 0 'Turn off output
        PLC_O%(28) = 0 'Kill the light

        Case 1 ' Manual
        If ((PLC_I%(25) <> 0) And (PLC_I_Last%(25) = 0)) Then
            Call IntWipe_Man_Toggle
        End If
        PLC_O%(19) = IntaglioWipeManual%
        PLC_O%(28) = IntaglioWipeManual%
        If (WipingCalRequest% <> 0) And (MSWipingImpReq% <> 0) Then
            PLC_O%(19) = 1 'Force if calibrating
            PLC_O%(28) = 1
        End If

        Case 2 'Auto
        If MSWipingImpReq% <> 0 Then
            PLC_O%(19) = 1
            PLC_O%(28) = 1
            Else
            PLC_O%(19) = 0
            PLC_O%(28) = 0
        End If

    End Select
    '-------------------------------------------------------

    Select Case IntaglioPrewipeControl% 'Intaglio Prewipe Control
        Case 0 ' Off
        PLC_O%(17) = 0 'Turn off output
        PLC_O%(29) = 0 'Kill the light
        Case 1 ' Manual
        If ((PLC_I%(30) <> 0) And (PLC_I_Last%(30) = 0)) Then
```

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```
            Call IntPrewipe_Man_Toggle
        End If
        PLC_O%(17) = IntaglioPrewipeManual%
        PLC_O%(29) = IntaglioPrewipeManual%
        Case 2 'Auto
        If (ActualLinSpeed% > Param_tbl$(912, 2)) Then
            PLC_O%(17) = 1
            PLC_O%(29) = 1
            Else
            PLC_O%(17) = 0
            PLC_O%(29) = 0
        End If
    End Select
    '-------------------------------------------------------

    Select Case IntaglioInker1Control% 'Intaglio Inker #1 Control
        Case 0 ' Off
        PLC_O%(15) = 0 'Turn off drive enable
        PLC_O%(16) = 0 'Turn off nip output
        PLC_O%(30) = 0 'Turn off the lights
        PLC_O%(31) = 0
        Case 1 ' Manual
        If ((PLC_I%(33) <> 0) And (PLC_I_Last%(33) = 0)) Then
            Call Inker1nip_Man_Toggle
        End If
        PLC_O%(16) = IntaglioInker1nip%
        PLC_O%(31) = IntaglioInker1nip%
        If ((PLC_I%(31) <> 0) And (PLC_I_Last%(31) = 0)) Then
            Call Inker1run_Man_Toggle
        End If
        PLC_O%(15) = IntaglioInker1Manrun%
        PLC_O%(30) = IntaglioInker1Manrun%
        Case 2 'Auto
        PLC_O%(15) = 1
        PLC_O%(30) = 1
        'Enable on run - speed calc'ed elsewhere
        If (ActualLinSpeed% > Param_tbl$(915, 2)) Then
            PLC_O%(16) = 1
            PLC_O%(31) = 1
            Else
            PLC_O%(16) = 0
            PLC_O%(31) = 0
        End If
    End Select
    '-------------------------------------------------------

    Select Case IntaglioInker2Control% 'Intaglio Inker #2 Control
        Case 0 ' Off
        PLC_O%(9) = 0 'Turn off drive enable
        PLC_O%(21) = 0 'Turn off nip output
        PLC_O%(32) = 0 'Turn off the lights
        PLC_O%(33) = 0
        Case 1 ' Manual
        If ((PLC_I%(34) <> 0) And (PLC_I_Last%(34) = 0)) Then
            Call Inker2nip_Man_Toggle
        End If
        PLC_O%(21) = IntaglioInker2nip%
        PLC_O%(33) = IntaglioInker2nip%
        If ((PLC_I%(32) <> 0) And (PLC_I_Last%(32) = 0)) Then
            Call Inker2run_Man_Toggle
        End If
        PLC_O%(9) = IntaglioInker2Manrun%
        PLC_O%(32) = IntaglioInker2Manrun%
        Case 2 'Auto
        PLC_O%(9) = 1
        PLC_O%(32) = 1
        'Enable on run - speed calc'ed elsewhere
```

```
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            If (ActualLinSpeed% > Param_tbl$(915, 2)) Then
                PLC_O%(21) = 1
                PLC_O%(33) = 1
                Else
                PLC_O%(21) = 0
                PLC_O%(33) = 0
            End If
        End Select
        '-------------------------------------------------------------


        End If 'End of the ESTOP else if thingy

        Call StrobePLCOutputs 'Update the PLC outputs

    End If

End Sub

Public Sub UpdateIntaglioDrive()

    ' Routine writes I/O needed control Intaglio Main drive

    If SysMode% <> 0 Then 'We're in combi mode
    Select Case RunMode%

    Case 0 'Normal Stop mode
        If LastIntaglioRmode% <> 0 Then 'We're initiating
            LastIntaglioRmode% = 0
        End If
        If LinSpeedIntegrator! > 0 Then
            LinSpeedIntegrator! = LinSpeedIntegrator! - Val(Param_tbl$(905, 2))
        End If
        Call AioOut(0, LinSpeedIntegrator! * Param_tbl$(923, 2) * (24 / frmConfig!MhRealInput7.V
alueReal))
        If ((ActualLinSpeed% < 3) And (PLC_O%(10) <> 0)) Then
            PLC_O%(5) = 0 'Disable drive
            PLC_O%(10) = 0 'Enable brake
        End If

    Case 1 'Calibration mode
        If LastIntaglioRmode% <> 1 Then 'We're initiating
            LastIntaglioRmode% = 1
        End If
        If IntaglioCalReq% <> 0 Then 'We need to move Main
            PLC_O%(5) = 1 'Enable drive
            PLC_O%(6) = 0 'Fast ramp
            PLC_O%(10) = 1 'Brake off
            Call AioOut(0, Val(Param_tbl(908, 2)) * Param_tbl$(923, 2))
            Else
            PLC_O%(5) = 0 'Enable drive
            PLC_O%(10) = 0 'Brake off
            Call AioOut(0, 0)
        End If

    Case 2 'Normal Run mode
        If LastIntaglioRmode% <> 2 Then 'We're initiating
            PLC_O%(5) = 1 'Enable drive
            PLC_O%(6) = 1 'Slow ramp
            PLC_O%(10) = 1 'Brake off
            LastIntaglioRmode% = 2
        End If
        If LinSpeedIntegrator! < TargetLinSpeed% Then
            LinSpeedIntegrator! = LinSpeedIntegrator! + Val(Param_tbl$(905, 2))
        End If
        If LinSpeedIntegrator! > TargetLinSpeed% Then
```

```
Module1 - 13

            LinSpeedIntegrator! = LinSpeedIntegrator! - Val(Param_tbl$(905, 2))
        End If
        Call AioOut(0, LinSpeedIntegrator! * Param_tbl$(923, 2) * (24 / frmConfig!MhRealInput7.V
alueReal))

    Case 3 'Fast Stop
        If LastIntaglioRmode% <> 3 Then 'We're initiating
            Call AioOut(0, 0) 'Null  the command
            PLC_O%(6) = 0 'Fast ramp
            PLC_O%(5) = 0 'Disable drive
            PLC_O%(10) = 0 'Apply full brake
            LinSpeedIntegrator! = 0
            LastIntaglioRmode% = 3
        End If

    Case 5 ' Jog mode
        If LastIntaglioRmode% <> 5 Then 'Init
            PLC_O%(5) = 1 'Enable drive
            PLC_O%(6) = 1 'Slow ramp
            PLC_O%(10) = 1 'Brake off
            LastIntaglioRmode% = 5
        End If
        If ((PLC_I%(8) <> 0) Or (PLC_I%(23) <> 0) Or (PLC_I%(50) <> 0) Or (PLC_I%(59) <> 0)) The
n
            Call AioOut(0, JogSpeed% * 4 * Param_tbl$(923, 2))
            Else
            Call AioOut(0, JogSpeed% * Param_tbl$(923, 2))
        End If
    End Select

    End If

End Sub

Public Sub UpdateWipingDrive()

    'Routine handles logic for Intaglio Wiping Drive

    Dim I%

    If (SysMode% <> 0) Then
    Select Case IntaglioWipeControl% 'Decode the mode

    Case 0 'Offline mode
        If LastIntaglioWipemode% <> 0 Then
            Call AioOut(1, 0) 'Command zero speed
            PLC_O%(20) = 0 'Disable Drive
            PLC_O%(18) = 0 ' Turn off contactor
            LastIntaglioWipemode% = 0
        End If

    Case 1 'Manual mode
        If LastIntaglioWipemode% <> 1 Then
            PLC_O%(18) = 1 'Fire up drive
            LastIntaglioWipemode% = 1
        End If
        If (RunMode% = 0) And (MSWipingJogReq% = 0) And (ActualLinSpeed% = 0) And (PLC_O%(20) <>
 0) Then 'We're stopped waiting for jog or ...
            ActualWipingSpeed% = 0
            PLC_O%(20) = 0 'Disable drive
            Call AioOut(1, 0) 'Zero velocity command
        End If
        If ((RunMode% = 0) And (ActualLinSpeed% > 0)) Or (RunMode% = 2) Then 'Generate command
            If PLC_O%(20) = 0 Then PLC_O%(20) = 1 'Be sure drive enabled
            ActualWipingSpeed% = ActualLinSpeed% * frmP00Intaglio!Slider5.Value / 100
            ActualWipingSpeed% = ActualWipingSpeed% * Val(Param_tbl$(832, 2)) / System_circumfer
ence#
```

Module1 - 14

```
            I% = ActualWipingSpeed% * Val(Param_tbl$(924, 2))
            Call AioOut(1, I%)
        End If
        If (RunMode% = 8) And (MSWipingJogReq% <> 0) Then 'We're jogging
            PLC_O%(20) = 1 'Enable drive
            ActualWipingSpeed% = Val(Param_tbl$(925, 2))
            I% = Val(Param_tbl$(924, 2)) * Val(Param_tbl$(925, 2))
            'Wiping velocity scale x Wiping jog speed
            Call AioOut(1, I%) 'Jog velocity command
        End If
        If (RunMode = 9) And (MSWipingJogReq% <> 0) Then 'We're calibrating
            PLC_O%(20) = 1 'Enable drive
            ActualWipingSpeed% = Val(Param_tbl$(929, 2))
            I% = Val(Param_tbl$(924, 2)) * Val(Param_tbl$(929, 2))
            'Wiping velocity scale x Wiping calibrate speed
            Call AioOut(1, I%) 'Jog velocity command
        End If

    Case 2 'Auto mode
        If LastIntaglioWipemode% <> 2 Then
            PLC_O%(18) = 1 'Fire up drive
            LastIntaglioWipemode% = 2
        End If
        If (((RunMode% = 0) Or (RunMode% = 3)) And (ActualLinSpeed% > 0)) Or (RunMode% = 2) Then
 'Generate command
            If PLC_O%(20) = 0 Then PLC_O%(20) = 1 'Be sure drive enabled
            ActualWipingSpeed% = ActualLinSpeed% * frmP00Intaglio!Slider5.Value / 100
            ActualWipingSpeed% = ActualWipingSpeed% * Val(Param_tbl$(832, 2)) / System_circumfer
ence#
            I% = ActualWipingSpeed% * Val(Param_tbl$(924, 2))
            Call AioOut(1, I%)
        End If
        If (RunMode% = 9) And (MSWipingJogReq% <> 0) Then 'Motion sys req
            If PLC_O%(20) = 0 Then PLC_O%(20) = 1 'Be sure drive enabled
            ActualWipingSpeed% = Val(Param_tbl$(929, 2))
            I% = ActualWipingSpeed% * Val(Param_tbl$(924, 2))
            Call AioOut(1, I%)
        End If
        If ((RunMode% = 0) Or (RunMode% = 3)) And (ActualLinSpeed% = 0) And (MSWipingJogReq% = 0
) Then 'Stopped
            If PLC_O%(20) <> 0 Then PLC_O%(20) = 0 'disable wipoing drive
            ActualWipingSpeed% = 0
        End If

    End Select

    Else 'We're in Flexo only mode
    PLC_O%(20) = 0 'Disable Drive
    PLC_O%(18) = 0 ' Turn off contactor
    LastIntaglioWipemode% = 0
    End If

End Sub

Public Sub UpdateMotionSystemRL()

    'This subroutine evaluates the PLC data and issues appropriate
    'commands to the motion cards

    Dim C%, I%, S%, X, X1

    If (EnableHostPolling1% = True) And (EnableHostPolling2% = True) Then

        S% = RequestNormStop% + RequestFastStop% + Keyswitch% 'Combine variables

        C% = WipingCalibrated%
        If IntaglioWipeControl% <> 2 Then C% = 255
```

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```
        'Mask calibration status if it's not in Auto

        If (SystemStatus% And &H300) = &H100 Then
            SystemStatus% = SystemStatus% Or &H200
            I% = CmdServo2%("SysRun=0")
            'We're powering up
        End If

        If (SystemStatus% And &H300) = &H200 Then
            SystemStatus% = SystemStatus% And &HFCFF
            I% = CmdServo2%("SysRun=9")
            ' We're powering down
        End If

        If (JogRequest% <> 0) And ((RunMode% = 0) Or (RunMode% = 3)) And (S% = 0) And (Startdelay% = 0) Then
            Startdelay% = 1
            frmMain!Timer1.Enabled = True
            PLC_O%(46) = 1 'start the bell
        End If
        'Arm the motion timer
        If (JogRequest% = 0) And (RunRequest% = 0) And (Startdelay% <> 0) Then
            frmMain!Timer1.Enabled = False
            Startdelay% = 0
            PLC_O%(46) = 0
        End If
        'Buttons released - Disarm the motion timer

        If (JogRequest% <> 0) And ((Startdelay% = 2) Or (Ridethrudelay% <> 0)) Then
            frmMain!Timer1.Enabled = False 'disable timer if not already
            frmMain!Timer6.Enabled = False 'disable ride thru too
            Startdelay% = 0
            Ridethrudelay% = 0
            PLC_O%(46) = 0
            I% = CmdServo1%("SysStat=0") 'Cancel calibration status
            I% = CmdServo1%("SysRun=5")
            I% = CmdServo2%("SysRun=5")
            LastRunMode% = RunMode%
            RunMode% = 5
            MachineRunning% = 5
            RunRequest% = 0
        End If
        'Jog button pressed

        If (JogRequest% = 0) And (RunMode% = 5) Then
            I% = CmdServo1%("SysRun=0")
            I% = CmdServo2%("SysRun=0")
            LastRunMode% = RunMode%
            RunMode% = 0
            MachineRunning% = 0
            Ridethrudelay% = 1 'Arm ride thru timer
            frmMain!Timer6.Enabled = True
        End If
        'Jog button released

        If (RunRequest% = 1) And (RunMode% = 0) And (ProductCalibrated% <> 0) And (S% = 0) And (C% <> 0) And (Startdelay% = 0) Then
            Startdelay% = 1
            frmMain!Timer1.Enabled = True
            PLC_O%(46) = 1
        End If
        If (RunRequest% = 1) And ((Startdelay% = 2) Or (Ridethrudelay% <> 0)) Then
            frmMain!Timer1.Enabled = False
            frmMain!Timer6.Enabled = False
            Startdelay% = 0
            Ridethrudelay% = 0
            PLC_O%(46) = 0
```

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```
            I% = CmdServo1%("SysRun=2")
            I% = CmdServo2%("SysRun=2")
            RunMode% = 2
            MachineRunning% = 2
            RunRequest% = 0
        End If
        'Run button pressed

        If (RequestFastStop% <> 0) And (ActualLinSpeed% > 5) Then
            I% = CmdServo1%("SysRun=0")
            I% = CmdServo2%("SysRun=0")
            LastRunMode% = RunMode%
            RunMode% = 3
            MachineRunning% = 0
        End If
        RequestFastStop% = 0
        'Either Jamup PB or Web break occurred

        If (RequestNormStop% <> 0) And (MachineRunning% <> 0) Then
            I% = CmdServo1%("SysRun=0")
            I% = CmdServo2%("SysRun=0")
            LastRunMode% = RunMode%
            RunMode% = 0
            MachineRunning% = 0
        End If
        RequestNormStop% = 0
        'Normal Stop button pressed

        If (WipingJogReq% <> 0) And (MachineRunning% = 0) Then
            I% = CmdServo1%("SysRun=8")
            I% = CmdServo2%("SysRun=8")
            LastRunMode% = RunMode%
            RunMode% = 8
            MachineRunning% = 8
        End If
        'Wiping Jog button pressed

         If (WipingJogReq% = 0) And (RunMode% = 8) Then
            I% = CmdServo1%("SysRun=0")
            I% = CmdServo2%("SysRun=0")
            LastRunMode% = RunMode%
            RunMode% = 0
            MachineRunning% = 0
        End If
        'Wiping Jog button released

        If WipingWinderEna% = 2 Then 'We're in AUTO
            X = 1 - (PWRewindDia - Param_tbl$(962, 2)) / (Param_tbl$(963, 2) - Param_tbl$(962, 2
))
            X1 = (frmConfig!MhRealInput16.ValueReal - frmConfig!MhRealInput15.ValueReal) * X
            X1 = X1 + frmConfig!MhRealInput15.ValueReal
            frmP00Intaglio!Slider6.Value = X1
        End If
        Call AioOut(2, frmP00Intaglio!Slider6.Value * Param_tbl$(926, 2))
        'Update the Intaglio Wiping rewinder vel command

        If (ProductCalRequest% <> 0) And (RunMode% = 0) And (S% = 0) Then
            I% = CmdServo1%("SysRun=1")
            I% = CmdServo2%("SysRun=1")
            LastRunMode% = RunMode%
            RunMode% = 1
            MachineRunning% = 1
        End If
        'Operator has pressed the Product Calibrate button

        If (RunMode% = 1) And ((ProductCalRequest% = 0) Or (ProductCalibrated% = 255)) Then
            I% = CmdServo1%("SysRun=0")
```

```
Module1 - 17

            I% = CmdServo2%("SysRun=0")
            LastRunMode% = RunMode%
            RunMode% = 0
            MachineRunning% = 0
        End If
       'Operator released Product cal button or we're calibrated

        If (WipingCalRequest% <> 0) And (RunMode% = 0) And (S% = 0) Then
            I% = CmdServo1%("SysRun=9")
            I% = CmdServo2%("SysRun=9")
            LastRunMode% = RunMode%
            RunMode% = 9
        End If
       'Operator has pressed the Wiping Calibrate button

        If (RunMode% = 9) And ((WipingCalRequest% = 0) Or (WipingCalibrated% = 255)) Then
            I% = CmdServo1%("SysRun=0")
            I% = CmdServo2%("SysRun=0")
            LastRunMode% = RunMode%
            RunMode% = 0
            MachineRunning% = 0
        End If
       'Operator released Wiping cal button or we're calibrated
    End If

End Sub
Public Sub Hyd_Init_Off()

    'Turn hydraulics off
    frmP00Intaglio!Label51.Visible = True
    frmP00Intaglio!Label52.Visible = False
    frmP00Intaglio!Label53.Visible = False
    Hydraulics% = 0

End Sub

Public Sub IntImps_Init_Off()

    'Intaglio Impression mode: Off
    If MachineRunning% = 0 Then
        IntaglioImpsControl% = 0
        frmP00Intaglio!Label9.Visible = True
        frmP00Intaglio!Label8.Visible = False
        frmP00Intaglio!Label6.Visible = False
        VarChangeFlag%(36) = 1
        If IntaglioImpsManual% <> 0 Then
            IntaglioImpsManual% = 0
            frmP00Intaglio!Label19.Visible = False
        End If
        frmP00Intaglio!Command22.Enabled = False
    End If

End Sub
Public Sub IntWipe_Init_Off()

    'Intaglio Wiping mode: Off
    If MachineRunning% = 0 Then
        IntaglioWipeControl% = 0
        frmP00Intaglio!Label15.Visible = True
        frmP00Intaglio!Label14.Visible = False
        frmP00Intaglio!Label13.Visible = False
        VarChangeFlag%(37) = 1
        If IntaglioWipeManual% <> 0 Then
            IntaglioWipeManual% = 0
            frmP00Intaglio!Label16.Visible = False
        frmP00Intaglio!Command25.Enabled = False
        End If
```

```
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    End If

End Sub
Public Sub IntPrewipe_Init_Off()

    'Intaglio Prewipe mode: Off
    If MachineRunning% = 0 Then
        IntaglioPrewipeControl% = 0
        frmP00Intaglio!Label21.Visible = True
        frmP00Intaglio!Label20.Visible = False
        frmP00Intaglio!Label18.Visible = False
        VarChangeFlag%(38) = 1
        If IntaglioPrewipeManual% <> 0 Then
            IntaglioPrewipeManual% = 0
            frmP00Intaglio!Label22.Visible = False
        End If
        frmP00Intaglio!Command29.Enabled = False
    End If

End Sub

Public Sub IntImps_Man_Toggle()

    'Intaglio Imps manual control
    If IntaglioImpsControl% = 1 Then
        If IntaglioImpsManual% = 0 Then
            IntaglioImpsManual% = 1
            frmP00Intaglio!Label19.Visible = True
            Else
            IntaglioImpsManual% = 0
            frmP00Intaglio!Label19.Visible = False
        End If
    End If

End Sub
Public Sub Numbers1_Man_Toggle()

    'Numbering shaft 1 manual control
    If Numbering_1_on% = 0 Then
        Numbering_1_on% = 1
        frmPressrun!Label31.Visible = True
        Else
        Numbering_1_on% = 0
        frmPressrun!Label31.Visible = False
    End If

End Sub
Public Sub Numbers2_Man_Toggle()

    If Numbering_2_on% = 0 Then
        Numbering_2_on% = 1
        frmPressrun!Label33.Visible = True
        Else
        Numbering_2_on% = 0
        frmPressrun!Label33.Visible = False
    End If

End Sub
Public Sub IntWipe_Man_Toggle()

    'Intaglio Wiping manual control
    If IntaglioWipeControl% = 1 Then
        If IntaglioWipeManual% = 0 Then
            IntaglioWipeManual% = 1
            frmP00Intaglio!Label16.Visible = True
            Else
            IntaglioWipeManual% = 0
```

Module1 - 19

```
            frmP00Intaglio!Label16.Visible = False
        End If
    End If
    VarChangeFlag%(40) = 1

End Sub
Public Sub IntPrewipe_Man_Toggle()

    'Intaglio Prewipe manual control
    If IntaglioPrewipeControl% = 1 Then
        If IntaglioPrewipeManual% = 0 Then
            IntaglioPrewipeManual% = 1
            frmP00Intaglio!Label22.Visible = True
            Else
            IntaglioPrewipeManual% = 0
            frmP00Intaglio!Label22.Visible = False
        End If
    End If

End Sub
Public Sub Inker1nip_Man_Toggle()

    'Intaglio Inker #1 nip control
    If IntaglioInker1Control% = 1 Then
        If IntaglioInker1nip% = 0 Then
            IntaglioInker1nip% = 1
            frmP00Intaglio!Label27.Visible = True
            Else
            IntaglioInker1nip% = 0
            frmP00Intaglio!Label27.Visible = False
        End If
    End If

End Sub
Public Sub Inker2nip_Man_Toggle()

    'Intaglio Inker #2 nip control
    If IntaglioInker2Control% = 1 Then
        If IntaglioInker2nip% = 0 Then
            IntaglioInker2nip% = 1
            frmP00Intaglio!Label45.Visible = True
            Else
            IntaglioInker2nip% = 0
            frmP00Intaglio!Label45.Visible = False
        End If
    End If

End Sub
Public Sub Inker1run_Man_Toggle()

    'Intaglio Inker #1 fountain control
    If IntaglioInker1Control% = 1 Then
        If IntaglioInker1Manrun% = 0 Then
            IntaglioInker1Manrun% = 1
            frmP00Intaglio!Label26.Visible = True
            Else
            IntaglioInker1Manrun% = 0
            frmP00Intaglio!Label26.Visible = False
        End If
    End If

End Sub
Public Sub Inker2run_Man_Toggle()

    'Intaglio Inker #2 fountain control
    If IntaglioInker2Control% = 1 Then
        If IntaglioInker2Manrun% = 0 Then
```

```
Module1 - 20

            IntaglioInker2Manrun% = 1
            frmP00Intaglio!Label41.Visible = True
            Else
            IntaglioInker2Manrun% = 0
            frmP00Intaglio!Label41.Visible = False
        End If
    End If

End Sub
Public Sub IntInker1_Init_Off()

    'Intaglio Inker #1 mode: Off
    If MachineRunning% = 0 Then
        IntaglioInker1Control% = 0
        frmP00Intaglio!Label42.Visible = True
        frmP00Intaglio!Label43.Visible = False
        frmP00Intaglio!Label44.Visible = False
        VarChangeFlag%(34) = 1
        IntaglioInker1nip% = 0
        IntaglioInker1Manrun% = 0
        frmP00Intaglio!Label26.Visible = False
        frmP00Intaglio!Label27.Visible = False
        frmP00Intaglio!Command12.Enabled = False
        frmP00Intaglio!Command32.Enabled = False
    End If

End Sub
Public Sub IntInker2_Init_Off()

    'Intaglio Inker #2 mode: Off
    If MachineRunning% = 0 Then
        IntaglioInker2Control% = 0
        frmP00Intaglio!Label34.Visible = True
        frmP00Intaglio!Label33.Visible = False
        frmP00Intaglio!Label32.Visible = False
        VarChangeFlag%(35) = 1
        IntaglioInker2nip% = 0
        IntaglioInker2Manrun% = 0
        frmP00Intaglio!Label41.Visible = False
        frmP00Intaglio!Label45.Visible = False
        frmP00Intaglio!Command36.Enabled = False
        frmP00Intaglio!Command37.Enabled = False
    End If

End Sub

Public Sub FlexoImps_Man_Toggle()

    'Flexo Imps manual control
    If FlexoImpsControl% = 1 Then
        If FlexoImpsManual% = 0 Then
            FlexoImpsManual% = 1
            frmP00Flexo!Label119.Visible = True
            Else
            FlexoImpsManual% = 0
            frmP00Flexo!Label119.Visible = False
        End If
    End If

End Sub
```

```
NO'Program: Proofing press-processor 1
NO'Module : P00_1.dmc
NO'Version: V1.0
NO'Edit   : -01
NO'Creation: 22-Sep-00
NO'Edit date: 01-Nov-01
NO'Author: Joseph B. Schutte III
NO'        Industrial Light&Motion,Inc.
NO'        2170 Van Blaricum Rd.
NO'        Cincinnati OH 45233  USA
NO'
NO'Copyright (C) 2000-2002
NO'Industrial Light & Motion, Inc.
NO'
NO'Revision History
NO'
NO'Ver/Ed   Date        Who   Reason
NO'-01 16-Oct-01 JBS Remap reg ctrls
NO'
NO'***********************************
NO'*  Powerup / Initialization here  *
NO'***********************************
#AUTO
ST XYZW;NO 'Stop all Axis'
AM XYZW
MO XYZW
NO [ * Define/Init variables  * ]
DM AxisX[10];DM AxisY[10];DM AxisZ[10]
DM AxisW[10];DM AxisDXa[10]
DM AxisDXb[10]
BiasA=1.000; BiasB=1.000
BiasC=1.000; BiasD=1.000
CtWghtI=1000; CtWghtJ=1000
CtWghtK=1000; CtWghtL=1000
CutPerr=0; NumPerr=0; FlexPerr=0
FlexCreq=0; DieCreq=0; NO [Init flags]
Flexoffs=0; Dieoffs=0; NO[Init offsets]
NumRoffs=0;  CutRoffs=0
FlexoffA=0; DieoffsA=0; NO[ Init Acums]
NumoffsA=0;CutoffsA=0; NumSH=0;CutSH=0
FlexSH=0; MIctwght=1; DieEna=0
NumEna=0; CutEna=0; JogSpeed=20
LinSpeed=20; NO [set line speed]
Lsysmode=0; NO [Last scan SysMode]
Lsysrun=0; NO [Last scan SysRun]
ParamOK=0;SysCntr=0;SysMode=0;SysRun=0
SaveI=0; NO [Powerdown save reg]
SysState=0

#PARCLR
JP #PARCLR,ParamOK=0
NO 'Wait here till Host sets ParamOK
XQ #CREG,1; NO [Launch cutoff ctrl]
XQ #ABSREG,2; NO [ABS update routine]
XQ #SUPPORT,3; NO [Launch aux task]
#MAIN

NO [ * Beginning of Executive Loop * ]
#MAIN00
JP #MAIN50, SysRun=4; NO [Reset faults]
```

```
JP #MAIN80, SysRun=6; NO [Drives Reset]
JP #MAIN10, SysRun=0; NO [Stop seq]
JP #MAIN60, SysRun=1; NO [Cal sequence]
JP #MAIN30, SysRun=2; NO [Run request]
JP #MAIN40, SysRun=3; NO [Jamup Stop]
JP #MAIN70, SysRun=5; NO [Jog seq]
JP #MAIN90, SysRun=9; NO [Powerdown]
JP #MN100, SysRun=10; NO [Set Sysmode]
JP #MAIN00;NO [Unrecognized command]

#MAIN10
NO '***********************************
NO '* System Normal Stop , SysRun=0   *
NO '***********************************
NO
JP #MAIN00, SysState=0; NO[stopped]
JP #MAIN19, (SysState=1)|(SysState=3)
JP #MAIN19, (SysState=4)|(SysState=6)
JP #MAIN19, SysMode<>0; NO [Not Flexo]
NO [No-op states 1,3,4,6]
ST X;AMX;NO [Stop Master]
#MAIN19
SysState=0
JP #MAIN00

#MAIN30
NO '***********************************
NO '*  RUN Mode               SysRun=2 *
NO '***********************************
NO                                    -
```

```
#MAIN40
NO '***********************************
NO '* System Jamup Stop Mod  SysRun=3 *
NO '***********************************
NO
JP #MAIN00, SysState=3;NO [stopped?]
JP #MAIN49, (SysState=1)|(SysState=0)
JP #MAIN49, (SysState=4)|(SysState=6)
```

```
JP #MAIN49, SysMode<>0
STX; AMX; MO XYZW;NO [Stop Master]
JP #MAIN49
#MAIN49
SysState=3
JP #MAIN00

#MAIN50
NO '***********************************
NO '* Fault Reset Mode      SysRun=4   *
NO '***********************************

JP #AUTO

#MAIN60
NO '***********************************
NO '* System Cal Mode   SysRun=1       *
NO '***********************************

SysState=1;NO [Calibrate mode]
Flexoffs=0; Dieoffs=0;NO[Init offsets]
NumRoffs=0; CutRoffs=0
FlexoffA=0; DieoffsA=0; NO[ Init Acums]
NumoffsA=0; CutoffsA=0
NO [Select entry point]
#MAIN61
JP #MAIN68, SysRun<>1
JP #MAIN62, FlexCreq<>0
STX; AMX; NO [Stop in case running]
JP #MAIN65
#MAIN62; NO [Jog Flexo axis]
JGX=ProdHoS*12*CtWghtI/60; BGX
#MAIN65
JP #MAIN66, DieCreq<>0
ST Y; AM YZW; NO [Stop axis']
JP #MAIN61
```

```
#MAIN70
NO '***********************************
NO '* JOG Mode              SysRun=5    *
NO '***********************************

SysState=5;NO [Set Jog mode status]
JP #MAIN75, SysMode<>0
JGX=JogSpeed*12*CtWghtI/60
BG X; NO [Start line]

#MAIN73
GR ,(CtWghtJ/CtWghtI)*BiasB
GR ,,(CtWghtK/CtWghtI)*BiasC
GR ,,,(CtWghtL/CtWghtI)*BiasD
JGX=JogSpeed*12*CtWghtI/60
JP #MAIN00, SysRun<>5
JP #MAIN73

#MAIN75
GR (CtWghtI/MIctwght)*BiasA
GR ,(CtWghtJ/MIctwght)*BiasB
GR ,,(CtWghtK/MIctwght)*BiasC
GR ,,,(CtWghtL/MIctwght)*BiasD
JP #MAIN00, SysRun<>5
JP #MAIN75


#MAIN80
NO '***********************************
NO '* Servo Loop Reset Mode  SysRun=6 *
NO '***********************************

SysState=0
ST*;NO [Stop all drives]
MO XY; NO [Inhibit drives]
JP #MAIN00

#MAIN90
NO '*** Powerdown mode - SysRun=9 ***
SaveI=_TPX; SysState=9
#MAIN91
JP #MAIN91, SysRun=9
DPX=SaveI
JP #MAIN00

#MN100
NO '***********************************
NO '* Set System Mode    SysRun=10    *
NO '***********************************
```

```
EN

NO '************************
NO '* Logic for            *
NO '* Diecut Auto Register *
NO '************************
#CREG
Cregrefm=0; cmks=0; Lcreg=0
#CREG00A; AxisY[8]=0
#CREG00
AxisDXb[2]=_TDX; JS #TAXDX1
posH=AxisDXb[4]
JP #CREG002, _ALY=0; NO [Mark?]
JP #CREG001, posH<CutLwin
JP #CREG001, posH>CutUwin
JP #CREG00
#CREG001
cmks=0; NO [Out of window]
JP #CREG00
#CREG002; NO [Have mark]
AxisY[2]=_RLY; JS #TAXY
Creg0=AxisY[4]
ALY
JP #CREG00, cmks>0
JP #CREG00, posH<CutLwin
JP #CREG00, posH>CutUwin
JP #CREG00A, CutRauto=0
```

```
#CREG100
Cregrefm=posH
Creg0=(CutRoffs*CtWghtJ)-Creg0
JP #CREG102, (Creg0*-1)>(CPRJ/2)
JP #CREG103, Creg0>(CPRJ/2)
JP #CREG104
#CREG102; Creg0=Creg0+CPRJ
JP #CREG104
#CREG103; Creg0=Creg0-CPRJ
#CREG104
CutPerr=Creg0/CtWghtJ
JP #CREG105, Creg0>2500; NO Limiter
JP #CREG105, (Creg0*-1) <-2500
JP #CREG109
#CREG105
JP #CREG109, Lcreg>2500
JP #CREG109, (Lcreg*-1)<-2500
Lcreg=Creg0; Creg0=0
JP #CREG110
#CREG109; Lcreg=Creg0
#CREG110
JP #CREG115, (Creg0*-1)>CutMEmax
JP #CREG116, Creg0>CutMEmax
JP #CREG117
#CREG115; Creg0=CutMEmax*-1
JP #CREG117
#CREG116; Creg0=CutMEmax
#CREG117
Creg0=Creg0*CutMEgn*-1
AMY; IPY=Creg0; cmkslast=Creg0
AxisY[8]=AxisY[8]+Creg0
cmks=1
JP #CREG00
EN

NO '************************
NO '* Logic for            *
NO '* Support variables    *
NO '************************
#SUPPORT
NO [Calculate the actual linespeed]
ALspeed=_TVX/CtWghtI*5;
WT 10
JP #SUPPORT

NO '************************
NO '* Logic for            *
NO '* ABS register routine *
NO '************************
#ABSREG
WT 1000
JP #ABSREG,(SysRun<>2)
NO [Update Flexo position]
JP #REGUP01, FlexSH=0
AxisDXa[2]=_TDX; AxisX[2]=_TPX
JS #TAXDX0; JS #TAXX
refpos=AxisDXa[4]; slpos=AxisX[4]
refpos=refpos/MIctwght
sloff=Flexoffs; ctwght=CtWghtI
cprs=CPRI
```

```
JS #ECALC
AMX; IP poserr02*AxisX[7]
FlexPerr=poserr03
#REGUP01
NO [Update Diecutter pos]
#REGUP02
NO [Update Diecut pull pos]
#REGUP03
NumPerr=0
NO [Update Sheeter position]
JP #ABSREG

#ECALC; NO [Pos error calculator]
slpos=slpos/ctwght
poserr02=slpos+sloff
poserr03=refpos-poserr02; NO [Error]
poserr04=poserr03*ctwght
JP #ECALC02, (poserr04*-1)>(cprs/2)
JP #ECALC03, poserr04>(cprs/2)
JP #ECALC04
#ECALC02; poserr04=poserr04+cprs
JP #ECALC04
#ECALC03; poserr04=poserr04-cprs
#ECALC04
poserr03=poserr04/ctwght
JP #ECALC05, poserr04<(Maxerr*-1)
JP #ECALC06, poserr04>Maxerr
JP #ECALC07
#ECALC05; poserr04=Maxerr*-1
JP #ECALC07
#ECALC06; poserr04=Maxerr
#ECALC07
poserr02=poserr04
EN

NO [***Counter mgmt Code***]

NO [ Array definitions ]
NO [ 0 - Active mod counter value  ]
NO [ 2 - Hardware counter value    ]
NO [ 3 - Last scan counter value   ]
NO [ 4 - Calc'ed actual position   ]
NO [ 6 - Masked counter value      ]
NO [ 7 - Correction gain           ]
NO [ 8 - Correction accumulator    ]
NO [ 9 - Temp scratch register     ]

#TAXDX0
AxisDXa[9]=AxisDXa[2]&$0FFFFFF
AxisDXa[6]=AxisDXa[9]
AxisDXa[9]=AxisDXa[9]-AxisDXa[3]
JP #TAXDX02, AxisDXa[9]>8388608
JP #TAXDX03, AxisDXa[9]<-8388608
JP #TAXDX04
#TAXDX02
AxisDXa[9]=AxisDXa[9]-16777216
JP #TAXDX04
#TAXDX03
AxisDXa[9]=AxisDXa[9]+16777216
#TAXDX04; AxisDXa[3]=AxisDXa[6]
```

```
AxisDXa[0]=AxisDXa[0]+AxisDXa[9]
#TAXDX05
JP #TAXDX06, AxisDXa[0]>(CPRDX-1)
JP #TAXDX07, AxisDXa[0]<0
JP #TAXDX08
#TAXDX06
AxisDXa[0]=AxisDXa[0]-CPRDX
JP #TAXDX05
#TAXDX07
AxisDXa[0]=AxisDXa[0]+CPRDX
JP #TAXDX05
#TAXDX08; AxisDXa[4]=AxisDXa[0]
EN

#TAXDX1
AxisDXb[9]=AxisDXb[2]&$0FFFFFF
AxisDXb[6]=AxisDXb[9]
AxisDXb[9]=AxisDXb[9]-AxisDXb[3]
JP #TAXDX12, AxisDXb[9]>8388608
JP #TAXDX13, AxisDXb[9]<-8388608
JP #TAXDX14
#TAXDX12
AxisDXb[9]=AxisDXb[9]-16777216
JP #TAXDX14
#TAXDX13
AxisDXb[9]=AxisDXb[9]+16777216
#TAXDX14; AxisDXb[3]=AxisDXb[6]
AxisDXb[0]=AxisDXb[0]+AxisDXb[9]
#TAXDX15
JP #TAXDX16, AxisDXb[0]>139999
JP #TAXDX17, AxisDXb[0]<0
JP #TAXDX18
#TAXDX16
AxisDXb[0]=AxisDXb[0]-140000
JP #TAXDX15
#TAXDX17
AxisDXb[0]=AxisDXb[0]+140000
JP #TAXDX15
#TAXDX18; AxisDXb[4]=AxisDXb[0]
EN

#TAXX
AxisX[9]=AxisX[2]&$0FFFFFF
AxisX[6]=AxisX[9]
AxisX[9]=AxisX[9]-AxisX[3]
JP #TAXX02, AxisX[9]>8388608
JP #TAXX03, AxisX[9]<-8388608
JP #TAXX04
#TAXX02
AxisX[9]=AxisX[9]-16777216
JP #TAXX04
#TAXX03
AxisX[9]=AxisX[9]+16777216
#TAXX04; AxisX[3]=AxisX[6]
AxisX[0]=AxisX[0]+AxisX[9]
#TAXX05
JP #TAXX06, AxisX[0]>(CPRI-1)
JP #TAXX07, AxisX[0]<0
JP #TAXX08
#TAXX06
```

```
AxisX[0]=AxisX[0]-CPRI;JP #TAXX05
#TAXX07
AxisX[0]=AxisX[0]+CPRI;JP #TAXX05
#TAXX08; AxisX[4]=AxisX[0]
EN

#TAXY
AxisY[9]=AxisY[2]&$0FFFFFF
AxisY[6]=AxisY[9]
AxisY[9]=AxisY[9]-AxisY[3]
JP #TAXY02, AxisY[9]>8388608
JP #TAXY03, AxisY[9]<-8388608
JP #TAXY04
#TAXY02
AxisY[9]=AxisY[9]-16777216
JP #TAXY04
#TAXY03
AxisY[9]=AxisY[9]+16777216
#TAXY04; AxisY[3]=AxisY[6]
AxisY[0]=AxisY[0]+AxisY[9]
#TAXY05
JP #TAXY06, AxisY[0]>(CPRJ-1)
JP #TAXY07, AxisY[0]<0
JP #TAXY08
#TAXY06
AxisY[0]=AxisY[0]-CPRJ;JP #TAXY05
#TAXY07
AxisY[0]=AxisY[0]+CPRJ;JP #TAXY05
#TAXY08; AxisY[4]=AxisY[0]
EN

#TAXW
AxisW[9]=AxisW[2]&$0FFFFFF
AxisW[6]=AxisW[9]
AxisW[9]=AxisW[9]-AxisW[3]
JP #TAXW02, AxisW[9]>8388608
JP #TAXW03, AxisW[9]<-8388608
JP #TAXW04
#TAXW02
AxisW[9]=AxisW[9]-16777216
JP #TAXW04
#TAXW03
AxisW[9]=AxisW[9]+16777216
#TAXW04; AxisW[3]=AxisW[6]
AxisW[0]=AxisW[0]+AxisW[9]
#TAXW05
JP #TAXW06, AxisW[0]>65535
JP #TAXW07, AxisW[0]<0
JP #TAXW08
#TAXW06
AxisW[0]=AxisW[0]-65536;JP #TAXW05
#TAXW07
AxisW[0]=AxisW[0]+65536;JP #TAXW05
#TAXW08; AxisW[4]=AxisW[0]
EN
```

```
NO    'Program    : Press 00 Processor 0
NO    'Module     : P00_0.dmc
NO    'Version    : V1.0
NO    'Edit       : -01
NO    'Creation   : 13-Sep-00
NO    'Edit date  : 05-Nov-00
NO    'Author     : Joseph B. Schutte III
NO    '             Industrial Light & Motion, Inc.
NO    '             2170 Van Blaricum Rd.
NO    '             Cincinnati  OH  USA
NO    '
NO    'Copyright (C) 1998-2002   Industrial Light & Motion, Inc.
NO    '
NO    '
NO    'Revision History
NO    '
NO    'Ver/Ed     Date        Who         Reason
NO    '

NO    'Sensor assignments:
NO    'VB1:IN2(LY) VB2:IN3(LZ) VB3:IN5(LE) VB4:IN6(LF)
NO    'Intaglio marks:IN8(LH)     Cutoff marks:IN1(LX)

NO '*************************************************************
NO '*       Powerup / Initialization here                       *
NO '*                                                           *
NO '*************************************************************
#AUTO
ST XYZWEFGH;NO 'Stop all Axis'
AM XYZWEFGH
MO XYZWEFGH

NO [ * Define/Init variables  * ]
NO
NO [Axis Acc/Dec parameters from host]
NO AxisAAC, AxisBAC, AxisCAC, AxisDAC
NO AxisEAC, AxisFAC, AxisGAC, AxisHAC
ALspeed=0; DieRauto=0; arFlexoB=1.000
CalState=0;NO [Calibrate mode]
DieMKpos=0
MSIJreq=0; MSWIreq=0; MSWJreq=0; NO [Requests for moves]
ChiEna=0; PIEna=0; POEna=0; SHEna=0; WIEna=0
EstopAC=200000
FlexCreq=0; IntCreq=0; DieCreq=0; NO [Init req flags]
Iposerr=0; Dposerr=0
JogSpeed=20
LastABSa=0; LastABSg=0
LinSpeed=20; NO [set line speed]
LockFlt=0; NO [Inhibit sys on fault]
Lsysmode=0; NO [Last scan SysMode]
Lsysrun=0; NO [Last scan SysRun]
MIctwght=1000
NormAC=7500; NO [Acc/Dec ramp norm run
ParamOK=0
RevCTR=0; lcntr=_TPH; NO [Init the system counter]
SysCntr=0; NO [Num of imps since pwrup]
SysMode=0
SysRun=0;
SysStat=0; NO [System status ]
SysState=0; NO [Current system state]
```

```
Testvar=0; NO [Debug variable]
VBregCTR=0;VBdieCTR=0;RevCTR=0;IntMarkC=0;DieMarkC=0; NO[Reg vars]
WIgain=1; WOgain=1
WipeMode=0; NO [Wiping transport mode]
ProdCal=0; WipeCal=0


NO '* Insystem variables  *
NO AxisAAC=2000
NO AxisBAC=2000000
NO AxisCAC=2000000
NO AxisDAC=2000000
NO AxisEAC=2000000
NO AxisFAC=2000000
NO AxisGAC=2000000
NO AxisHAC=2000000


#PARCLR
JP #PARCLR,ParamOK=0
NO 'Wait here till Host sets ParamOK

#MAIN
XQ #SHUTM, 1; NO [Start Shuttle transport]
XQ #WIPEM, 2; NO [Start wiping task]
XQ #DIEM, 3; NO [Start diecut register task]

NO [ * Beginning of Executive Loop * ]
#MAIN00

JP #MAIN50, SysRun=4; NO [Reset faults]
JP #MAIN80, SysRun=6; NO [Drives Reset]
JP #MAIN00, LockFlt>0 ;NO [Locked out?]
JP #MAIN10, SysRun=0; NO [Stop seq]
JP #MAIN30, SysRun=2; NO [Run request]
JP #MAIN40, SysRun=3; NO [Jamup Stop]
JP #MAIN70, SysRun=5; NO [Jog seq]
JP #MN100, SysRun=10; NO [Set Sysmode]
JP #MAIN00;NO [Unrecognized command]

#MAIN10
NO '*********************************
NO '* System Normal Stop   SysRun=0   *
NO '*                                 *
NO '*********************************
NO
SysState=SysRun;NO [Update  state]
JS #COUNTER; NO [Update system counter]
JP #MAIN15, SysMode<>0; NO [Combi?]
JP #MAIN00

#MAIN15
GR (CtWghtA/MIctwght)*BiasA*-1
GR ,,,(CtWghtD/MIctwght)*BiasD*-1
GR ,,,,,,(CtWghtG/MIctwght)*BiasG*-1
JP #MAIN00


#MAIN30
NO '*********************************
```

```
NO '*  RUN Mode              SysRun=2 *
NO '*                                 *
NO '***********************************
NO
SysState=SysRun;NO [Update  state]
JP #MAIN35, SysMode<>0; NO [Combi?]
#MAIN31
JS #COUNTER; NO [Update system counter]
JP #MAIN00, SysRun<>2
JP #MAIN31

#MAIN35
GR (CtWghtA/MIctwght)*BiasA*-1
JS #COUNTER; NO [Update system counter]
JP #MAIN00, SysRun<>2
JP #MAIN35

#MAIN40
NO '***********************************
NO '* System Jamup Stop Mod  SysRun=3 *
NO '*                                 *
NO '* EstopAC controls decel ramp.    *
NO '***********************************
NO
SysState=SysRun;NO [Update  state]
JP #MAIN45, SysMode<>0; NO [Combi?]
#MAIN42
JP #MAIN00, SysRun<>3
JP #MAIN42

#MAIN45
GR (CtWghtA/MIctwght)*BiasA*-1
GR ,,,(CtWghtD/MIctwght)*BiasD*-1
GR ,,,,,,(CtWghtG/MIctwght)*BiasG*-1
JP #MAIN00, SysRun<>3
JP #MAIN45

#MAIN50
NO '***********************************
NO '* Fault Reset Mode       SysRun=4  *
NO '*                                  *
NO '* Called on reset.                 *
NO '*                                  *
NO '************************************

JP #AUTO

#MAIN70
NO '***********************************
NO '* JOG Mode             SysRun=5    *
NO '*                                  *
NO '************************************

SysState=5;NO [Set Jog mode status]
JP #MAIN75, SysMode<>0
#MAIN71
JS #COUNTER; NO [Update system counter]
JP #MAIN00, SysRun<>5
JP #MAIN71
```

```
#MAIN75
GR (CtWghtA/MIctwght)*BiasA*-1
GR ,,,(CtWghtD/MIctwght)*BiasD*-1
GR ,,,,,,(CtWghtG/MIctwght)*BiasG*-1
JS #COUNTER; NO [Update system counter]
JP #MAIN00, SysRun<>5
JP #MAIN75


#MAIN80
NO '************************************
NO '* Servo Loop Reset Mode  SysRun=6 *
NO '*                                  *
NO '************************************

SysState=0
CalState=0;NO [Cancel calibrate status]
SysStat=0
ST*;NO [Stop all drives]
MO XY; NO [Inhibit drives]
JP #MAIN00

#MN100
NO '************************************
NO '* Set System Mode    SysRun=10    *
NO '*                                  *
NO '************************************

SysState=100; NO [Set Combo mode]
ST XYZWEFGH; NO [Stop everything]
MO XYZWEFGH
JP #MN119, SysMode=0; NO [ Flexo only? ]
#MN110
GA DX,,,DX,,,DX; NO [Set reference]
GR (CtWghtA/MIctwght)*BiasA*-1
GR ,,,(CtWghtD/MIctwght)*BiasD*-1
GR ,,,,,,(CtWghtG/MIctwght)*BiasG*-1
JP #MN111, PIEna=0; NO [Product Infeed]
SH X
#MN111
JP #MN112, SHEna=0; NO [Shuttle rolls]
SH YZ
#MN112
JP #MN113, POEna=0; NO [[Product outfeed]
SH W
#MN113
JP #MN119, ChiEna=0; NO [Chill rolls]
SH G
#MN119
SysRun=100
JP #MAIN00

EN

#COUNTER
NO [ *** System COunter support *** ]
cntr=_TPH; NO [Get current master position]
JP #CNTR001, cntr>10000; NO [Are we in the window?]
JP #CNTR001, lcntr<130000
RevCTR=RevCTR+1
```

```
#CNTR001
lcntr=cntr
EN

NO '*****************************************************************
NO '*       Logic for Product Shuttle System                        *
NO '*                                                               *
NO '*****************************************************************
#SHUTM
TrigCam=0; PMode=0; vb1P=0

#SHUT00
JS #INITCAM, TrigCam<>0; NO [Cam init request]
JP #SHUT000, SysRun=0; NO [Stop request]
JP #SHUT100, SysRun=1; NO [Product calibration req]
JP #SHUT200, SysRun=2; NO [System RUN]
JP #SHUT500, SysRun=5; NO [System JOG]
JP #SHU1000, SysRun=10; NO [Initialization seq]
JP #SHUT00; NO [Unsupported command]

#SHUT000; NO [ Stop Sequence ]
PMode=0
JP #SHUT00


#SHUT100; NO [...Calibrate Sequence - Product...]

PMode=1; ProdCal=0
ST ADG; AM ADG; NO [Disengage PI servo]
GAG=W; GRG=(CtWghtG/CtWghtD)*BiasG

JP #SHUT105, @IN[2]<>0; NO [Jump if VB1 full]
NO [...PI (VB1) low on paper...]
JP #SHUT101, SysMode<>2; NO [Flexo only combi mode]
FlexCreq=1; WT 50; NO [Request Flexo move]
#SHUT101
JGA=ProdHoS*CtWghtA/5; BGA
#SHUT102
JP #SHUT180, SysRun<>PMode; NO [Abort?]
JP #SHUT102, @IN[2]=0
JP #SHUT103, SysMode<>2; NO [Only need Flexo in combi]
FlexCreq=0; WT50; NO [Cancel request]
#SHUT103
JGA=1; NO [Stop drive]
JP #SHUT110; NO [PI box calibrated]

#SHUT105; NO [...PI (VB1) too much paper...]
ST ADG; AM ADG


IntCreq=1; NO [Start Main drive]
#SHUT106
JP #SHUT180, SysRun<>PMode
JP #SHUT106, @IN[2]<>0
IntCreq=0; NO [Stop Intaglio drive]
JP #SHUT110; NO [PI box calibrated]

#SHUT110; NO [VB2 / PO box calibration]
```

```
JP #SHUT115, @IN[3]<>0; NO [Jump if VB2/WO box full]
GRD=0; GRG=0; STA; AMA; NO [Inhibit Chill and PO drives]
IntCreq=1; WT70; NO [Starting Flexo and Int main drives]
FlexCreq=1; WT50; NO [...VB2 low on paper...]
JGA=ProdHoS*CtWghtA/5; BGA
#SHUT111
JP #SHUT180, SysRun<>PMode
JP #SHUT111, @IN[3]=0
IntCreq=0; WT50; FlexCreq=0; WT50; NO [Stop drives]
STA; AMA; NO [Stop PI servo]
JP #SHUT120; NO [..VB2 calibrated..]

#SHUT115; NO [VB2 has too much paper]
GAG=W; GRG=(CtWghtG/CtWghtD)*BiasG
JGD=ProdHoS*CtWghtD/5
DieCreq=1; WT50; BGD; NO [Request Diecutting units to run]
#SHUT116
JP #SHUT180, SysRun<>PMode
JP #SHUT116, @IN[3]<>0
DieCreq=0; WT50; STD; AMD; NO [We're there - stop]

#SHUT120; NO [Calibrated and waiting]
ProdCal=255
#SHUT121
JP #SHUT121, SysRun=PMode
JP #SHUT190

#SHUT180; NO [Bailout of calibration]
IntCreq=0; FlexCreq=0; DieCreq=0; NO [Stop all Req's]
ST ADG; AM ADG
ProdCal=0
JP #SHUT190
```

```
#SHUT200; NO [...Run Mode - Product paper...]
PMode=2
#SHUT201
JP #SHUT00, PMode<>SysRun
JP #SHUT201, SysMode=0; NO [Flexo only mode?]
JP #SHUT250, IntRauto<>0; NO [Auto (mark) register mode?]

NO [VB regulator mode - Manual]
VBregCTR=RevCTR; NO [First cycle sync counter]
arFlexoB=1.000; NO [Reset auto reg Flexo bias to null
#SHUT210
JP #SHUT00, PMode<>SysRun
JP #SHUT201, IntRauto<>0
vb1Plast=vb1P; NO [Archieve the previous VB sensor read]
vb1P=@IN[2]; NO [Get ther current state]
JP #SHUT211, (vb1P=0)&(vb1Plast<>0); NO [Falling edge?]
JP #SHUT212, ((VBregCTR+2)<RevCTR)&(vb1P=0)
JP #SHUT213, ((VBregCTR+2)<RevCTR)&(vb1P<>0)
JP #SHUT210; NO [Loop...]
```

```
#SHUT211
vbpos1=_TPH; NO [Read the reference encoder]
VB1sampo=vbpos1
Iposerr=VB1nullP-vbpos1; NO [This is the pos error]
JP #SHUT213, Iposerr<(IntVBmax*-1); NO [Error out of - range]
JP #SHUT212, Iposerr>IntVBmax; NO [Error out of + range]
ipos001=Iposerr; JP #SHUT214; NO [Error in range]
#SHUT212
ipos001=IntVBmax; JP #SHUT214
#SHUT213
ipos001=IntVBmax*-1; JP #SHUT214
#SHUT214
ipos001=ipos001*IntVBgn; NO [Adjust for error gain]
SH1corr=ipos001
#SHUT215; NO [Wait for end of print cycle]
JP #SHUT00, PMode<>SysRun
```

```
JP #SHUT210

NO [Intaglio Auto register mode]
#SHUT250
ALH; NO [Intaglio mark latch]
#SHUT251
NO **** JS #SHUT270; NO [VB1 auto mode support]
JP #SHUT00, PMode<>SysRun
JP #SHUT201, IntRauto=0
JP #SHUT251, _ALH<>0
JP #SHUT250, (_RLH<IntLwin)|(_RLH>IntUwin)
VB1sampo=_RLH
```

```
ipos001=Iposerr; JP #SHUT254; NO [Error in range]
#SHUT252
ipos001=IntMEmax; JP #SHUT254
#SHUT253
ipos001=IntMEmax*-1; JP #SHUT254
#SHUT254
ipos001=ipos001*IntMEgn; NO [Adjust for error gain]
SH1corr=ipos001
#SHUT255; NO [Wait till end of print cycle]
JS #SHUT270; NO [VB1 auto mode support]
JP #SHUT00, PMode<>SysRun
```

```
JP #SHUT250

NO [Intaglio Auto Reg VB1 support]
#SHUT270
vb1Plast=vb1P; vb1P=@IN[2]
JP #SHUT271, (vb1P<>0)&(vb1Plast=0); NO [Rising edge]
JP #SHUT275, ((VBregCTR+2)<RevCTR)&(vb1P<>0)
JP #SHUT276, ((VBregCTR+2)<RevCTR)&(vb1P=0)
JP #SHUT279; NO [No activity]
```

```
#SHUT271; vbpos1=_TPH; VB1autoE=VB1nullA-vbpos1
JP #SHUT272, (VB1autoE*-1)>(CPRH/2); NO [Neg rollover?]
JP #SHUT273, VB1autoE>(CPRH/2); NO [Pos rollover?]
JP #SHUT274
#SHUT272; VB1autoE=VB1autoE+CPRH; JP #SHUT274
#SHUT273; VB1autoE=VB1autoE-CPRH
#SHUT274
JP #SHUT276, VB1autoE<(arVBmax*-1)
JP #SHUT275, VB1autoE>arVBmax
JP #SHUT277
#SHUT275; VB1autoE=arVBmax; JP #SHUT277
#SHUT276; VB1autoE=arVBmax*-1
#SHUT277


#SHUT279
EN

#SHUT500; NO [...Jog Mode - Product paper...]
PMode=5
#SHUT501
JP #SHUT00, PMode<>SysRun
JP #SHUT501


#SHU1000; NO [...Initialization sequence - Product paper...]
PMode=10
#SHU1001
JP #SHUT00, PMode<>SysRun
JP #SHU1001


#INITCAM; NO [Initialize the SHUTTLE cam]
```

```
EN

NO '*****************************************************************
NO '*       Logic for Wiping System                                 *
NO '*                                                               *
NO '*****************************************************************
#WIPEM
WMode=0; NO [WipeMode follows SysRun ex. offline]
WipeCal=0; vb3P=0; vb4P=0; vb3rctr=0; vb4rctr=0

NO [ * Beginning of Wiping Loop * ]
#WIPE00
JP #WIPE990, WipeMode=0; NO [Are we offline?]
JP #WIPE01, WMode<>99; NO [Do we need to powerup drives?]
SH EF
WMode=0

#WIPE01
JP #WIPE000, SysRun=0; NO [Stop seq]
JP #WIPE200, SysRun=2; NO [Run request]
JP #WIPE800, SysRun=8; NO [Jog seq]
JP #WIPE900, SysRun=9; NO [Calibrate mode]
JP #WIPE00; NO [Unrecognized command]

#WIPE000; NO [Stop Sequence]
WMode=0

#WIPE001
JP #WIPE00, SysRun<>WMode
JS #WIPE960; NO [Update the WI - WO speed loop]
JP #WIPE001, ALspeed>WautoonS; NO [Down to Wipe off speed?]
#WIPE006
w001=_TPH
JP #WIPE007, ((w001+3000)>IPwipaut)&((w001-3000)<IPwipaut)
JS #WIPE960; NO [Update the WI - WO speed loop]
JP #WIPE006, ALspeed>5; NO [Wait if we haven't stopped yet]
#WIPE007
MSWIreq=0; NO [Wiping impressions off]
ST EF
#WIPE008
JP #WIPE008, (SysRun=WMode)&(WipeMode<>0) ; NO [Wait for mode to change]
JP #WIPE00


#WIPE200; NO [Run Sequence]
WMode=2

#WIPE201
```

```
JP #WIPE00, SysRun<>WMode; NO [Bailout?]
JP #WIPE210, WipeMode=1; NO [Manual mode handler]
JP #WIPE201, ALspeed<WautoonS; NO [Up to Wipe speed?]

#WIPE202
JP #WIPE00, SysRun<>WMode
w001=_TPH
JP #WIPE202, (w001+3000)<IPwipaut
JP #WIPE202, (w001-3000)>IPwipaut; NO [In position?]
MSWIreq=1; NO [Wiping impressions on]
JGE=WipeRefS*CtWghtE/5
JGF=WipeRefS*CtWghtF/5
BG EF; NO [Get Drives in gear]

#WIPE203; NO [This is the regulator loop]
JS #WIPE960
JP #WIPE211, (WipeMode=1)&(WipeMoo=0); NO [Manual Off req?]
JP #WIPE203, WMode=SysRun ;NO [Still in Run?]
JP #WIPE00

#WIPE210; NO [Manual ON scan]
JP #WIPE00, SysRun<>WMode
JP #WIPE202, WipeMoo<>0; NO [Manual ON trigger]
JP #WIPE210

#WIPE211; NO [Manual OFF detect]
WMode=0; NO [Trick decoder]
JP #WIPE007; NO [Seq off]

#WIPE800; NO [Jog Sequence]

MSWJreq=1; NO [Request wiper jog]
WMode=8
WipeCal=0; NO [Clear calibration bit]
JGE=1; JGF=1; BG EF; NO [Get Drives in gear]

#WIPE801___        _____      ___
```

```
#WIPE900; NO [Calibrate Sequence - Wiping]

WMode=9; WipeCal=0
MSWIreq=1; NO [Request wiping imps on]
JGE=1; JGF=1; BG EF; NO [Get Drives in gear]
```

```
JP #WIPE902, @IN[5]<>0; NO [VB3 full]
JGE=WipeHoS*CtWghtE/5; NO [...Need paper...]
#WIPE901
JP #WIPE985, SysRun<>WMode; NO [Abort?]
JP #WIPE901, @IN[5]=0
JGE=1; NO [Stop drive]
JP #WIPE910; NO [WI box calibrated]

#WIPE902; NO [...WI (VB3) too much paper...]
MSWJreq=1; NO [Start wiping drive]
JGF=WipeHoS*CtWghtF/5
#WIPE903
JP #WIPE985, SysRun<>WMode
JP #WIPE903, @IN[5]<>0
MSWJreq=0; JGF=1; NO [Stop wiping drive]
JP #WIPE910; NO [WI box calibrated]

#WIPE910; NO [VB4 / WO box calibration]
JP #WIPE912, @IN[6]<>0; NO [VB4 / WO box full]
MSWJreq=1; NO [Start Wiping and PI drives-we're low]
JGE=WipeHoS*CtWghtE/5
#WIPE911
JP #WIPE985, SysRun<>WMode
JP #WIPE911, @IN[6]=0
MSWJreq=0; JGE=1; NO [Stop drives]
JP #WIPE920

#WIPE912; NO [VB4 has too much paper]
JGF=WipeHoS*CtWghtF/5; NO [...Need paper...]
#WIPE913
JP #WIPE985, SysRun<>WMode
JP #WIPE913, @IN[6]<>0
JGF=1

#WIPE920
SPE=5000; SPF=5000
ST EF; AM EF
PRE=WVBcalof
PRF=WVBcalof
BG EF
AM EF; MSWIreq=0; NO [Wiping imps off]
WipeCal=255
#WIPE921
JP #WIPE921, SysRun=WMode
JP #WIPE00

EN

#WIPE965; NO [...VB3...]
```

```
#WIPE966
Wposerr=Wposerr+CPRH; JP #WIPE968
#WIPE967
Wposerr=Wposerr-CPRH
#WIPE968
JP #WIPE969, Wposerr<(WipVBmax*-1)
JP #WIPE970, Wposerr>WipVBmax
Wpos001=Wposerr; JP #WIPE971
#WIPE969
Wpos001=WipVBmax*-1; JP #WIPE971
#WIPE970
Wpos001=WipVBmax
#WIPE971


EN


#WIPE975; NO [...VB4...]
JP #WIPE979, ((vb4rctr+2)<RevCTR)&(vb4P<>0); NO [VB4 box FULL!]
JP #WIPE980, ((vb4rctr+2)<RevCTR)&(vb4P=0); NO [VB4 box EMPTY!]
WVBpos=_TPH; Wposerr=VB4nullP-WVBpos; NO [This is the error]
JP #WIPE976, (Wposerr*-1)>(CPRH/2); NO [Negative rollover?]
JP #WIPE977, Wposerr>(CPRH/2); NO [Positive rollover?]
JP #WIPE978
#WIPE976
Wposerr=Wposerr+CPRH; JP #WIPE978
#WIPE977
Wposerr=Wposerr-CPRH
#WIPE978
JP #WIPE979, Wposerr<(WipVBmax*-1)
JP #WIPE980, Wposerr>WipVBmax
Wpos001=Wposerr; JP #WIPE981
#WIPE979
Wpos001=WipVBmax*-1; JP #WIPE981
#WIPE980
Wpos001=WipVBmax
#WIPE981


EN


#WIPE985; NO [Bailout of calibration]
ST EF; MSWIreq=0; MSWJreq=0
JP #WIPE00


#WIPE990; NO [Offline - disable drives]
JP #WIPE00, WMode=99
ST EF; MO EF
WMode=99
JP #WIPE00
```

```
EN

NO '*****************************************************************
NO '*       Logic for Diecutting Register control                   *
NO '*                                                               *
NO '*****************************************************************
#DIEM
vb2P=0
NO [...Run Mode - Product paper...]

#DIEM00

#DIEM201
JP #DIEM00, SysRun<>2
JP #DIEM201, SysMode=0; NO [Flexo only mode?]
JP #DIEM250, DieRauto<>0; NO [Auto (mark) register mode?]

NO [VB regulator mode - Manual]
VBdieCTR=RevCTR
#DIEM210
JP #DIEM00, SysRun<>2
JP #DIEM201, DieRauto<>0
vb2Plast=vb2P; NO [Archieve the previous VB sensor read]
vb2P=@IN[3]; NO [Get ther current state]
JP #DIEM211, (vb2P<>0)&(vb2Plast=0); NO [Falling edge?]
JP #DIEM212, ((VBdieCTR+2)<RevCTR)&(vb2P<>0); NO [Box Outer limit?]
JP #DIEM213, ((VBdieCTR+2)<RevCTR)&(vb2P=0)
JP #DIEM210; NO [Loop...]
#DIEM211
vbpos2=_TPH; NO [Read the reference encoder]
VB2sampo=vbpos2
Dposerr=VB2nullP-vbpos2; NO [This is the pos error]
JP #DIEM213, Dposerr<(DieVBmax*-1); NO [Error out of - range]
JP #DIEM212, Dposerr>DieVBmax; NO [Error out of + range]
dpos001=Dposerr; JP #DIEM214; NO [Error in range]
#DIEM212
dpos001=DieVBmax; JP #DIEM214
#DIEM213
dpos001=DieVBmax*-1; JP #DIEM214
#DIEM214

JP #DIEM210


NO [Diecutter Auto register mode]
#DIEM250
dmks=0; DieMacum=0; DieMctr=0; DieWctr=0
#DIEM251
dmkslast=dmks; dmks=@IN[1]; NO [Get mark state]
JP #DIEM253, (dmks=0)&(dmkslast<>0); NO [Falling edge of mark?]
JP #DIEM00, SysRun<>2; NO [Line stop?]
JP #DIEM201, DieRauto=0; NO [Return to manual?]
JP #DIEM251
```

```
#DIEM253
posh=_TPH; NO [Read position as quickly as possible]
JP #DIEM251, (posh<DieLwin)|(posh>DieUwin)
DieMKpos=posh; NO [Save for VB display]
Dposerr=(Dieoffs*MIctwght)-posh; NO [calculate the error]
DieMacum=DieMacum+Dposerr; DieMctr=DieMctr+1; NO [Get data]
JP #DIEM251, DieMctr<DieSave; NO [Enough data]
dpos001=DieMacum/DieSave; NO [Calc the average]
JP #DIEM257, dpos001<(DieMEmax*-1); NO [Out of range?]
JP #DIEM258, dpos001>DieMEmax
JP #DIEM259
#DIEM257; dpos001=DieMEmax*-1; JP #DIEM259
#DIEM258; dpos001=DieMEmax
#DIEM259


#DIEM260; NO [This is the wait loop]
JP #DIEM250, RevCTR>(VBdieCTR+DieSintv); NO [Wait for correct time]
JP #DIEM00, SysRun<>2
JP #DIEM201, DieRauto=0
JP #DIEM260

EN
```